DG .com

## VENDOR DEPENDENCY

Businesses moving to the Web worry about their reliance on software packages and third-party support. Page 62

## SECURITY JOURNAL

Users surfing for porn and forgetting their passwords sidetrack our security manager. Page 56

## CYBERINSURANCE

Companies are finding out the hard way that they may need cyberliability insurance. Page 44

# COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS ▪ WWW.COMPUTERWORLD.COM

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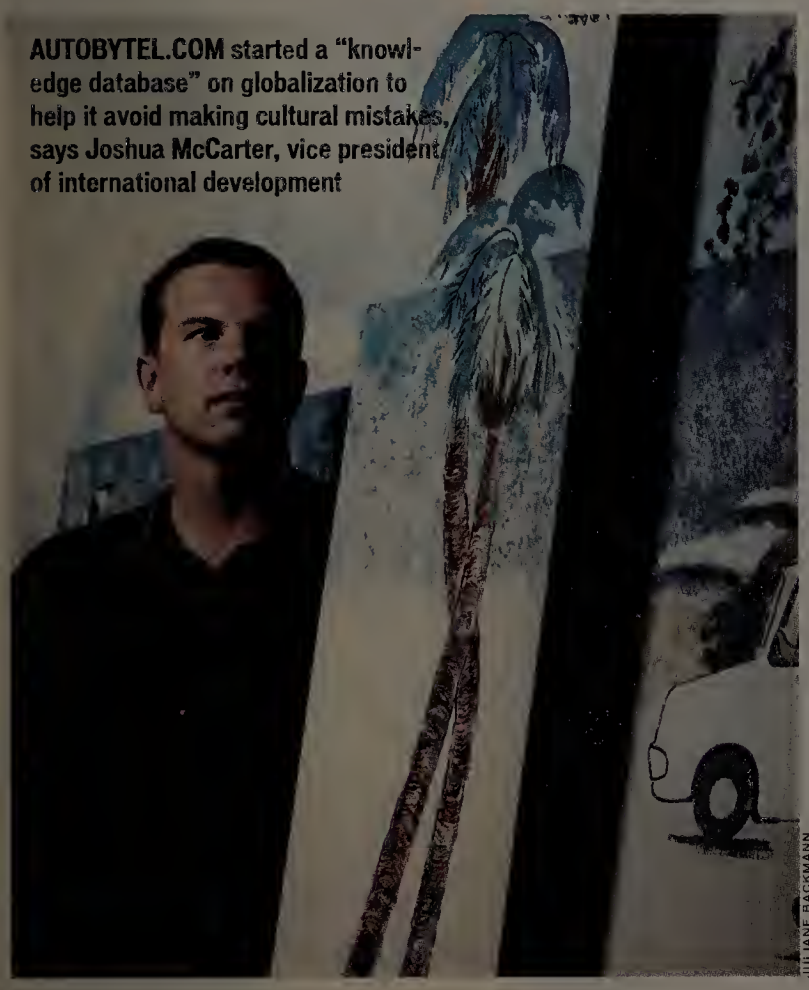

JULIANE BACKMANN

**AUTOBYTEL.COM** started a "knowledge database" on globalization to help it avoid making cultural mistakes, says Joshua McCarter, vice president of international development

# GLOBAL FAUX PAS

MANY U.S.-BORN WEB SITES WIND UP offending half the online world. Why? They speak only English and run roughshod over international customs at a time when multilingual sites are becoming an e-commerce necessity. Even well-meaning companies are finding that Web site globalization is a big challenge and requires constant vigilance to avoid cultural gaffes.

*Story is on page 17.*

# LINUX APPLICATIONS MAKE LEAP TO UNIX

*Trend could result in migration away from branded Unix variants, observers say*

BY DOMINIQUE DECKMYN AND JAIKUMAR VIJAYAN

Hewlett-Packard Co. and IBM both pledged last week to support Linux applications on additional variants of Unix, so that Linux binaries could become an almost universal format for deploying applications. That will give users more applications to choose from — while sticking with their trusted, data-center-ready Unix environments.

ENTERPRISE APPLICATIONS

However, it could also spell danger for the very vendors that are offering the support, facilitating a wholesale migration away from their proprietary Unix versions toward Linux, observers said.

HP pledged support for Linux binaries in the IA-64 version of HP-UX and IBM in Dynix/ptx. Earlier this month, IBM promised Linux support in the upcoming AIX 5L as well. Most Linux applications can also now be recompiled relatively easily to run on other processor architectures — including IBM's S/390 mainframes.

"It's the best of both worlds," said Mike Prince, vice president and CIO at Burlington Coat Factory Warehouse Corp. in Burlington, N.J.

*Linux, page 16*

### Linux Everywhere

*Linux for Intel binaries is becoming the application standard that Unix never had.*

- IBM: AIX 5L will support Linux binaries (on IA-64 and Power PC). Dynix/ptx will run Linux binaries on NUMA-Q machines in the fourth quarter.
- Hewlett-Packard: Will support Linux binaries on HP-UX for IA-64.
- Sun: Solaris for Intel runs Linux binaries using the lxrun utility.
- SCO/Caldera: SCO UnixWare runs Linux binaries using the lxrun utility.

## PRIVACY HIGH ON DEMOCRATS' LIST

*But don't look for any specifics in planks*

BY PATRICK THIBODEAU

The Democrats made privacy a banner issue at their convention last week and called for more legal protections. But neither the Democrats nor the Republicans are offering any details about new laws or regulations they might seek — which doesn't surprise many people.

"I don't think I stand a chance of getting any detail

*Democrats, page 77*

THE ASSOCIATED PRESS

**REP. JAY INSLEE (D-Wash.): "Big banks and business are profiling our spending habits"**

## PANDESIC USERS STILL IN DARK

*Shuttered e-commerce ASP mum on fate*

BY MARK HALL

Pandesic LLC handed out pink slips to many of its employees last week, fueling concern among its users who are anxious to learn of their own fate with the e-commerce application service provider.

On Aug. 8, an ad hoc group of "dozens and dozens" of its 100-plus customers sent an e-mail with 10 questions to acting CEO Catherine Yetts. But she has yet to respond, according to Brent Cohen, chief

*Pandesic, page 77*

## NOW BOARDING? IF NOT, CLICK HERE

*Expedia, others seek to mollify fliers with data*

BY MICHAEL MEEHAN

In what may become known as the summer of the delayed flight, travel vendors are leveraging online and wireless technologies to pacify an otherwise furious public.

For example, online travel agency Expedia Inc. earlier this month started dedicating an entire section of its Web site to tracking delayed flights and giving travelers tips on how to survive the delays.

"It became clear it was a critical-mass situation and we had to do something for our customers," said Expedia managing editor Mary Brisson.

Bellevue, Wash.-based Expedia offers real-time flight-status

*Travel, page 77*

NEWSPAPER

# To A Network Administrator, This Is What The Holy Grail Looks Like.

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## THE CHIEF'S FIRST YEAR

As Roy Cales can attest, the first few months are the key survival period for a new CIO or CTO, who is often hired to resolve major problems. It's a time when building relationships may be the most important thing he does. Page 46

RICH LILLASH

## THERE'S NO PLACE LIKE HOME

Working in another country may seem like a clever excuse for an extended paid vacation, but don't pack yet. International jobs for IT professionals are hard to get, and adapting to a foreign culture can be even harder. Page 68

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AUGUST 21, 2000

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**6 GM LAUNCHES** e-commerce venture with dealers, sidestepping regulations but not all the problems they pose.

**8 FBI BUSTS** extortionists in the Bloomberg case, showing how increasingly common online extortion has become.

**10 PEOPLESOFT SLASHES** its consultant list to keep from recommending those who aren't qualified.

**12 ANTITRUST CASE** threatens the strong U.S. economy, say government lawyers, who are pushing for speedy conclusion.

**14 BRITISH BANK TO SPEND** $24 million on a CRM system it hopes will integrate customer information.

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**52 CANADIAN SCIENTISTS** are using software from Graph-On to link to one another and to genetic research data.

SECURITY JOURNAL

**56 "JUDE" HUNTS** for users surfing pornographic Web sites and frets about the company's lax password security.

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**58 COMPRESSION IS** a way to encode digital data so it takes up less storage space — find out more.

FUTURE WATCH

**59 THE NEXT GENERATION** Internet is growing in development labs nationwide.

**60 WIRELESS LANS** allow managers to extend the reach of corporate enterprise information systems.

**62 IT EXECUTIVES** at seven companies share their experiences and anxiety about their mission-critical packages.


## This Week Online

■ This week our discussion of Carnivore continues on the **Security Watch** community page:

**John E. Collingwood**, the FBI's assistant director of Public and Congressional Affairs, makes the case that the e-mail tracking Carnivore system can stop crime and terrorism and has already done so.

Meanwhile, Congressman **Bob Barr** (R-Ga.) argues that Carnivore should be stopped and the country's entire collection of laws regarding privacy and wiretapping need to be rewritten to catch up to technology.

## OPINIONS


**28 MARYFRAN JOHNSON** says labor unions should change with the times to reflect the changes in the economy.

**28 DON TAPSCOTT** says the world's richest nations see the value IT can have in bridging the gap with poorer countries.

**29 ALLAN E. ALTER** writes that the established "big dogs" of business are starting to eat up the "small dog" dot-coms.

**32 JOHN GANTZ** tells how the IT group at Toyota Motor Sales found a new niche.

**32 WILLIAM M. ULRICH** says IT must incorporate information management disciplines into Internet initiatives.

**36 ED YOURDON** says e-commerce project managers have some new tricks to learn in order for their work to succeed.

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AT DEADLINE

## Ex-Novell Execs Plan Open-Source NetWare

A company led by former Novell Inc. executives said last week that it plans to build an open-source operating system that will be compatible with Novell's NetWare. Timpanogas Research Group Inc. in Orem, Utah, said it hopes to offer its NetWare-compatible system to Novell customers in the second half of next year. The Metropolitan Area Network Operating System will be based on a software kernel similar to the one at the heart of Novell's NetWare SMP system, Timpanogas executives said.

## Healtheon/WebMD To Lay Off Employees

Healtheon/WebMD Corp. last week joined the list of dot-coms that are laying off workers to cut expenses. Steve Grant, Healtheon/WebMD's chief operating officer, said the job cuts are part of the company's effort to chop $75 million from a projected $1 billion in expenses this year. The aim is to turn a profit next year, Grant said. Atlanta-based Healtheon/WebMD reported $55 million in losses, excluding noncash charges, for the second quarter this year. It posted $12.7 million in losses for the same period last year.

Grant declined to say how many jobs will be cut. Healtheon/WebMD, which connects doctors, patients and insurers online, has 2,210 employees in 25 offices nationwide.

## Short Takes

The size of the global market for small wireless Internet devices will grow from $10 billion today to $73 billion by 2005, according to a study conducted by STRATEGY ANALYTICS INC. in Luton, England. . . . Eight movie companies have won the first round in a court fight against the publishers of a hacking magazine that offered a free program that has the potential to decode and copy DVD movies. . . . An International Chamber of Commerce-appointed arbitrator has ended a three-year dispute by granting ANDERSEN CONSULTING in Chicago complete independence from financial obligations or future relationships with former parent companies ANDERSEN WORLDWIDE and ARTHUR ANDERSEN LLP.

# Gov't Standards Released For Health Care Data

*Congressionally mandated rules speed claims processing; privacy regulations still to come*

BY JULEKHA DASH

Though the health care industry is often wary of federal intervention, one piece of recent legislation may actually make the industry more efficient, according to information technology leaders and analysts.

Last week, the U.S. Department of Health and Human Services (HHS) unveiled standard formats for processing claims, authorizing referrals and handling other administrative tasks conducted electronically. The rules are part of the Health Insurance Portability and Accountability Act (HIPAA), passed by Congress in 1996. The HHS, however, is only now releasing guidelines for how to implement many of the new regulations.

Health care organizations must adopt the standards within 26 months or pay up to $100 per violation but no more than $25,000 per year.

According to the HHS, insurers currently use as many as 400 different electronic forms. But using a standard format should ease electronic communications between payers and health care providers by making transactions faster and less confusing, according to Richard Telesca, an analyst at Cambridge, Mass.-based Giga Information Group Inc.

"Cooperation is the issue with payers. They do everything they can to avoid paying claims," said Scott Novogoratz, vice president of information systems at Advanced Healthcare, a 250-physician group based in Milwaukee. "There's a real impetus now for health care organizations to work together to trade patient information."

### Impending Costs

The new HIPAA rules will require IT workers at Advanced Healthcare to standardize the organization's electronic interfaces with payers, though Novogoratz is still assessing how much time and money that will take.

Because the new HIPAA rules employ ANSI X12, the standard used for electronic data interchange transactions, which are common in health care, most health care organizations shouldn't have a problem complying with this part of the regulation, unless they haven't upgraded their systems, added Novogoratz.

But other impending HIPPA changes promise to make the overall conversion as complex and expensive as year 2000 remediations were, although some predictions estimate that the cost will be triple that of Y2k, according to Cathy Eddy, chairwoman of the HIPAA working group at Irving, Texas-based VHA Inc., an alliance of approximately 2,000 community health care organizations.

In the coming months, the HHS will outline its rules for privacy and security and determine a code set to identify health care providers. The HHS has unveiled only about 10% of its entire HIPAA rules to date, said Mark Anderson, a vice president at Stamford, Conn.-based Meta Group Inc. and a former hospital CIO. ◗

AT A GLANCE

### Easier to Swallow

*Details of new HIPAA rules:*

- **Insurers are required** to accept claims in a standardized format.
- **Standards** for reporting diseases within health care transactions are established.
- **Employers can use** a standard electronic format to enroll and unenroll employees in a health plan and pay their health care premiums.

### Correction

Due to a reporting error, "Broker Seeks Retail Markets" [News, Aug. 14] incorrectly implied the number of countries in which Interactive Brokers LLP's retail customers can buy and trade U.S. securities. Retail customers are currently limited to buying U.S. stocks, options and index futures in France, Germany, Hong Kong, Switzerland and the U.K.

# GE Launches Online Market For 100,000 Trade Partners

*B2B exchange to work with most legacy systems*

BY MICHAEL MEEHAN

Expecting "tens of millions of dollars" in transactions before the end of the calendar year, General Electric Co.'s Global Exchange Services division last week unveiled a business-to-business Internet marketplace available to all of GE's 100,000 trading partners.

Promising shorter purchasing turnarounds and reduced transaction costs, GE said it intends to host the entire network, saving its trading partners from having to build their own online business-to-business platforms.

GE in Fairfield, Conn., joins a crowded field of players looking to gain a share of what forecasters predict will be a cash cow in the next five years.

Chris Silva, an associate research analyst at International Data Corp. in Framingham, Mass., estimated that this year, business-to-business transactions will amount to $100.7 billion, with 7.5% of that amount occurring online through electronic marketplaces. Those figures will climb to $837 billion and 56% in 2004, he predicted.

Silva said he expects the online exchange to shake out during the next two years.

"You're going to see one or two dominant players," he said, adding that the cost of switching from one marketplace to another will likely be prohibitive.

### Ease-of-Use Goal

GE spokesman Jim Fowler said participants will pay a one-time linkage fee of less than $1,000 to enter its Express Marketplace. After that, buyers will pay transaction fees. Auction-based purchasing fees will be on a sliding scale, decreasing as companies buy more goods. Direct purchasing fees have yet to be established, Fowler said.

GE said its Java-enabled, Unix-based e-commerce platform will be able to function with all types of enterprise resource planning, customer relationship management and other legacy systems.

"We want to be flexible to use any protocol and translate to any protocol," Fowler said.

Silva cited experience with protocols as being key to GE's entry into the online business-to-business space.

"A lot of this is going to be built on the expertise GE has in the [electronic data interchange] procurement marketplace, where they're a giant," he said. "They have experience on how all this stuff has to be integrated."

Silva called GE's marketplace "a good first step," as it offers catalog purchases with the help of Commerce One Inc. in Pleasanton, Calif., as well as auctions, purchase-order status tracking and back-office accounting functions.

"We've been testing these various functions within our individual businesses, and now we feel confident in offering them to our trading partners," Fowler said. ◗

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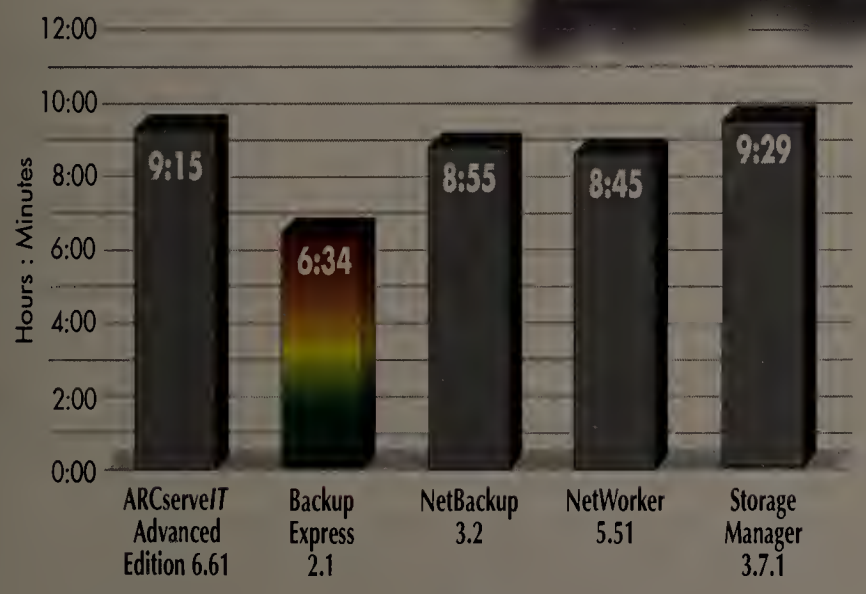


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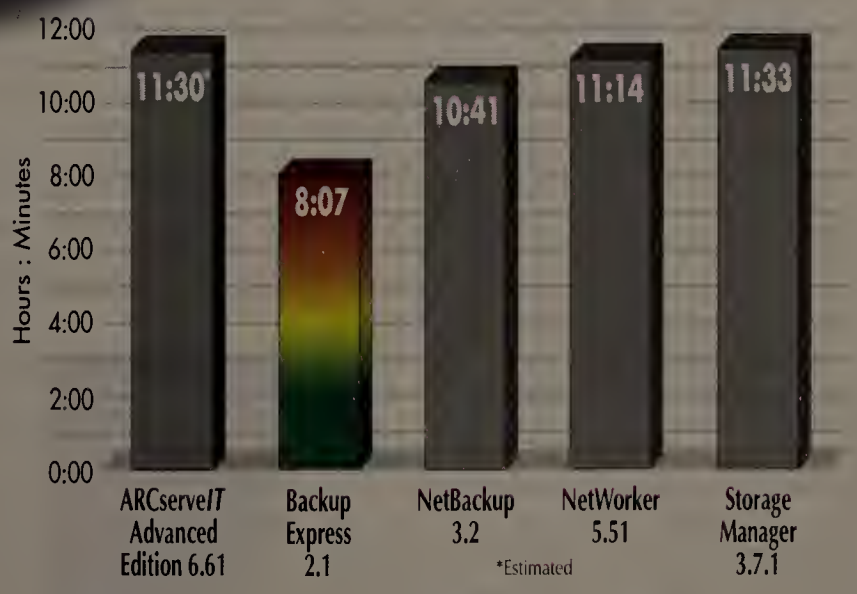


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# GM Teams With Dealers To Sell Cars Online

*New joint dot-com venture takes aim at Web-based car brokers*

BY LEE COPELAND

DETAILS ON the still-unnamed company remain sketchy, but General Motors Corp. and several dealers last week unveiled a dot-com initiative aimed at competing against popular online brokers such as Autobytel.com Inc.

In recent months, automakers such as Dearborn, Mich.-based Ford Motor Co. have also launched projects with dealers to configure and sell cars online (see story, page 34).

But analysts said automakers still need to address dealer business models, which are becoming obsolete in the wake of growing numbers of Internet-informed consumers.

In a pilot Web site due to launch this fall, the GM/dealer venture will offer data on competing vehicle models and pricing, along with access to GM vehicle inventories. It will also give consumers the ability to purchase vehicles online from participating dealers.

The joint venture is open to all of GM's 7,700 dealers, officials said.

## Popularity Contest

Automakers' Web sites haven't been as popular with consumers as the sites of car brokers like Autobytel.com.

GM said hits on the sites of online brokers outnumbered hits on its own GMbuyer.com site by a margin of 3 to 1.

Mike Glut, business development director at GM, attributed the comparatively lower traffic on GM's consumer site to the lack of competitive information. "Consumers want to get all their information in one place," he said.

**JUST THE FACTS**

### GM, Dealers Get Dot-Cozy

- GM will split ownership and funding 50/50 with participating dealers.
- Pilot launch slated for fall.
- The site will offer information about competitive models and pricing, access to GM vehicle inventories and the ability to purchase vehicles online through participating dealers.

But the new venture seeks to offer more than that capability, said Robert DiSisto, an analyst at Gartner Group Inc. in Stamford, Conn.

"The goal is to get more [consumer] data to help make GM more effective in its selling and marketing strategies," said DiSisto.

Dealers control most of that information now, as local franchise laws prevent automakers from selling cars directly. But online brokers have cropped up as intermediaries between the dealers and consumers.

But ultimately, DiSisto said, "the automakers need to help their dealers change business models to be more service-oriented, as opposed to oriented to making profits from selling vehicles."

Jerry Seiner, who operates three GM dealerships in Salt Lake City and is a founding member of GM's new joint venture, said many dealers are changing the way they do business in response to lower margins on cars.

"We are a click-and-brick industry, and many dealers are looking at other profit centers in the future," such as repair services and vehicle financing, said Seiner.

GM and participating dealers will evenly split the ownership stake and funding of the venture. Detroit-based GM didn't furnish details on the cost or technical infrastructure required to build the site. ◗

# Web Plays Key Role in Drive Toward Tire Recall

*Motorists quick to turn to Internet*

BY LEE COPELAND

The Internet has once again emerged as a critical component in publicizing and helping to drive a big consumer issue — this time one of the largest tire recalls in U.S. history.

Two weeks ago, Bridgestone/Firestone Inc. voluntarily recalled 6.5 million tires used on Ford Motor Co. sport utility vehicles because of peeling tire treads. The tire maker and automaker both have used the Web to disseminate information to consumers, but it was Internet sleuthing by a whistle-blower that unmasked the depth of the tire tread problem and prompted the recall.

It was just about closing time on Friday, July 28, when Sean Kane, a research analyst at Strategic Safety LLC, a motor safety research and litigation firm based in Arlington, Va., received an e-mail tip.

An automotive industry worker in Venezuela notified Kane of tire recalls in South America.

Kane then verified the tip at *http://el-nacional.terra.com.ve* — a Venezuelan newspaper's Web site. Over the weekend, he uncovered similar tire problems in Saudi Arabia, Thailand and Malaysia.

**SEAN KANE got an e-mail tip about tire recalls in South America**

On July 31, he notified the National Highway Traffic Safety Administration (NHTSA) and then posted a demand for a U.S. recall on his firm's Web site.

Nashville-based Bridgestone/Firestone issued the voluntary recall of its Radial ATX and ATX II and Wilderness AT tires 10 days later. Before the U.S. recall, Dearborn, Mich.-based Ford had offered to replace Firestone tires for free to customers in six other countries. But Ford officials blamed tire problems abroad on other issues.

In the past three weeks, an NHTSA investigation of reports of accidents involving Firestone tires revealed a growing problem. As of last month, there were four known deaths in such accidents. The investigation has since turned up reports of more than 62 fatalities and more than 100 injuries in crashes that were the result of skids when treads peeled off the casings of the now recalled tires.

The Web proved to be a vital tool for grassroots consumer communication during previous recalls. After Ford recalled defective ignition switches on 8.7 million vehicles four years ago, Web sites such as *www.flamingfords.com* emerged as resources and as places for people to share information.

"We're using the Web as a way for consumers to find us and for us to find them," said Kane. "Once we had the information, we were able to act almost instantaneously, and given the numbers of accidents and injuries, we hope it has reduced the number of lives lost due to this problem."

Ford, too, has turned to the Web to educate customers. Company officials said *www.ford.com* received 1.5 million hits during the first eight days of the recall. The site normally receives an average of 2 million hits per month.

Ford has also run banner ads about the recall on popular Web portals like Yahoo, America Online, MSN and iVillage.

But San Mateo, Calif.-based Keynote Systems Inc., a company that monitors Web usage, has given Firestone/Bridgestone's Web site mixed reviews on accessibility. Keynote said *www.bridgestone-firestone.com* was down for 15 hours the day of the recall, but performance returned to 96% availability by last Thursday.

A spokeswoman for Bridgestone/Firestone said she had no comment. ◗

# Used-Car Biz on the Increase

Almost one-third of the U.S. households that purchased a preowned vehicle between last fall and spring of this year used the Internet in the buying process, according to a new study released by Gartner Group Inc. in Stamford, Conn., last week.

The study, which surveyed 40,000 U.S. households between September and March, showed that Internet usage increased by almost 50% over the previous year in used-vehicle purchases. But while 31% of consumers searched for competitive information and used-vehicle inventories online, only 1% actually purchased a vehicle online.

"Internet usage is growing for both new and used cars," said Thilo Koslowski, an automotive analyst at Gartner. "Still, consumers are slower to use the Internet for used-car purchases than for new ones. But [Web usage] is picking up."

Koslowski cited consumer concern about buying a "lemon" as the greatest inhibitor to Internet purchases of used vehicles.

Of the households surveyed, 79% indicated an interest in using the Web for their next used-vehicle purchase.

J. D. Power & Associates in Agoura Hills, Calif., pegs the used vehicle market at $370 billion annually.

*– Lee Copeland*

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## BRIEFS

### HP Profits Soar 23%

Hewlett-Packard Co. last week reported higher than expected quarterly earnings, citing its aggressive Internet approach as well as growing PC demand as reasons for increased revenue. For the period ended July 31, the vendor reported net income of $1.04 billion on net revenue of $11.8 billion, increases of 23% and 15%, respectively, compared with the same period last year.

### SBC, BellSouth Mum On NTT Reports

BellSouth Corp. and SBC Communications Inc. issued terse "no comments" in response to news reports that NTT DoCoMo Inc. in Japan has entered into talks to buy a 10% to 15% stake in BellSouth's and SBC's new, as yet unnamed, joint wireless venture. Analysts said the reports are an accurate reflection of real talks between DoCoMo, the wireless arm of Tokyo-based Nippon Telephone and Telegraph Co., and the two U.S. carriers.

### Affirmative Action . . . With Crème

Little Debbie snack-cake maker McKee Foods Corp. in Collegedale, Tenn., last week said it will use software to track compliance with affirmative action laws and ease reporting duties for its information services department. Integration of the new reporting software, Criterion Inc.'s Affirmative Action Management System, is scheduled to be complete by December.

### Study: Sites Pay Through Nose for Eyes

Traditional methods for valuing Internet businesses usually fail because most dot-coms aren't making money. But researchers at Stanford University and the University of Washington have found a strong relationship between acquisition price and Web traffic. In a study of 42 acquisitions of Internet companies last year, the researchers found that companies pay a premium for "eyeballs" – $167 per Web visitor on average. The study can be found at *www.stanford.edu/~vmohan.*

# Suspects Nabbed in Bloomberg Extortion Case

*Financial magnate helps FBI in sting*

BY JENNIFER DiSABATINO

THE U.S. Attorney's office in Manhattan last week identified three Kazakhstan nationals who allegedly tried to extort $200,000 from financial information magnate Michael Bloomberg in exchange for not exploiting supposed security holes in his Web site.

Oleg Zezov and an accomplice, Igor Yarimaka, from Almaty, Kazakhstan, were arrested by police at the Hilton Hotel in London on Aug. 10 at the behest of the FBI and the U.S. District Attorney's office in New York. They remain in custody in London, awaiting extradition.

Authorities later identified Elena Gorokhova as a third suspect. Gorokhova was an employee at Kazomerts Security, an Almaty-based company given access to Open Bloomberg, a database of global financial information, according to FBI special agent David P. Marziliano. Marziliano said Gorokhova was also the registered owner of the cellular phone used to call Deutsche Bank AG's London branch, seeking verification of funds deposited by Bloomberg as part of a sting operation conducted by the FBI.

### Warning to Others

The case may not be an isolated one, experts said. "A lot more companies are definitely going to fall prey to extortion," said Ira Winkler, president of the Internet Security Advisors Group in Severna Park, Md.

"It doesn't sound like the [suspects in the Bloomberg case] were very mature — and that's the point. Anyone with a computer and a lot of time on their hands" can do this, and the more time they have, the more daring and demanding they will get, Winkler said.

The fact that the suspects went to a U.S.-friendly country for the meeting demonstrates their naïveté, Winkler said.

Zezov allegedly e-mailed Bloomberg on March 24 from a Hotmail account and indicated that he knew of vulnerabilities in the Bloomberg LP news site. Bloomberg contacted the FBI, which launched a sting operation, according to the complaint filed in U.S. District Court in New York, where Bloomberg.com's servers are.

Collaborating with the FBI, Bloomberg played along with the threats and agreed to pay $200,000 to Zezov. In exchange, Zezov allegedly offered "advice" on how to protect the site by pointing out some of its weaknesses.

Gorokhova, Zezov and Yarimaka were each indicted on three counts of threats, extortion and unauthorized computer intrusion by the U.S. District Court in New York.

Although the alleged illegal activity took place in Kazakhstan, U.S. law applies because Zezov allegedly accessed Bloomberg.com servers located in New York, said Ken Dort, an attorney at Gordon & Glickson LLC in Chicago. ◗

### Tips to Prevent Web Site Hacking

*Ira Winkler, president of the Internet Security Advisors Group, suggests the following ways to protect your portals:*

- Ensure software is updated and the site is properly maintained
- Perform a vulnerablilty assessment on a regular basis
- As a last resort, install intrusion-detection software as well as mechanisms to detect if any Web sites have been modified
- Have a default refresh to display the proper content if sites have been modified
- If architecture allows, put read-only media on the site

# Researcher Discusses Response to Attacks

*Says better training, security are needed*

BY ANN HARRISON
DENVER

At the Ninth Annual Usenix Security Symposium here last week, University of Washington researcher David Dittrich told the unnerving story of how his school first discovered that its computers had been infiltrated by distributed denial of service (DDOS) attackers just one year ago.

DDOS crackers continue to be a global threat. Earlier this month, the South Korean government announced that 200 small corporations, 30 educational organizations and 20 government systems were paralyzed by DDOS attacks.

Dittrich discovered that attackers can get root access on compromised systems and install the DDOS agents in just over three seconds. Assuming that it takes three to six seconds to acquire each new host, an attacker can set up a new network of 2,200 agents in two to four hours. Dittrich said that it takes only 100 to 200 attacking hosts to knock a large site completely off a network.

Dittrich traced the first DDOS agents to a small Internet service provider in Texas that provided connection to a master machine that was controlling the agents. He said the initial DDOS attacks came from no-charge Internet service providers that can't read caller identifications to stop known DDOS attack sources.

Dittrich added that most sites aren't prepared to capture the invading traffic on their networks or on subnetworks that would help analyze packets and track attackers.

Dittrich said poorly trained network administrators and the lack of firewalls and intrusion-detection systems still make it difficult to find the source and strategy of the attack. "Poor system network forensic tools and skills means that we have no idea who did what, when, where and how," he said.

Ian Poynter, president of Jerboa Inc., a Cambridge, Mass., security consulting firm, said CIOs and CEOs need to take steps to defend their networks. "I'm not sure they want to listen [to Dittrich], but they need to listen," said Poynter. DDOS attacks, he added, "can only be fixed by a coordinated effort, and we all have a role to play." ◗

### Under Fire

*DDOS attacks have escalated in the past year:*

**8/99** Researcher David Dittrich finds DDOS agents on PCs on the University of Washington network [illegible] master machine to a small service provider in Texas

**11/99** CERT issues an advisory on DDOS tools; the SANS Institute receives reports of DDOS-type attacks

**1/3/00** Dittrich releases tool that lets users scan for attacks

**1/14/00** DDOS attack on Oz.net affects up to 70% of users in the Pacific Northwest

**2/8/00** DDOS attacks on e-commerce sites bring issue to public's attention

**8/00** South Korea announces 250 sites under DDOS attack

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# PeopleSoft Weeds Out Consultants for Quality

BY JAIKUMAR VIJAYAN

PeopleSoft Inc. has dropped nearly 70% of the consulting companies on its preferred-partner list in a campaign to boost the quality of services delivered around its upcoming PeopleSoft8 product, company officials said. The Pleasanton, Calif.-based vendor is also doubling the number of its internal consultants and is planning to institute a stringent certification process this fall.

The moves should dramatically increase PeopleSoft's direct consulting role around PeopleSoft8 while paring its third-party consultant base to a handful of top-tier, better-qualified service providers, said Vice President Jeffrey Read.

By year's end, PeopleSoft hopes to double the number of customer installs it handles directly, from 10% to 20% of all new business, Read said.

"It's an excellent move to have a certification program," said Rod Ely, systems architect at Green Mountain Coffee Inc. in Waterbury, Vt. "Otherwise, it becomes very hard to know who is really qualified."

PeopleSoft's growing direct involvement is also a good thing for users, said John Martines, a member of PeopleSoft's International Customer Advisory Panel of users.

"I know that when I am working with their consultants that they have [PeopleSoft's] developers and senior managers and customer service standing behind them," Martines said.

So far, PeopleSoft has spent about $25 million retraining its consultants in the new technology, which will be the first enterprise resource planning (ERP) package that's completely Web-enabled, Read said.

In the past year, the company has been working to focus its certification efforts on only those partners it knows have the infrastructure and skills required to deliver PeopleSoft8 services, Read said.

As a result, only 34 of 96 firms remain on its list, he said.

PeopleSoft's initiatives reflect the growing bid by ERP vendors to address quality woes stemming from out-of-control consultant programs, said David Caruso, president of AMR Research Inc. in Boston. "They signed up with literally hundreds of [outside consultants] just to fill out the body count," he said.

## Consultant Shuffle

*PeopleSoft is reorganizing its consulting services:*

- The company has reduced the number of consultants in its preferred-partner list by 65%, in a bid to have a more focused and better-qualified set of consultants.
- It will double the number of its internal consultants from its present 2,600.
- It will double the number of direct implementations with customers.

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# Feds Call Microsoft Antitrust Case Too Important to Delay

*Government pushes for review, says case is hindering vendors*

BY PATRICK THIBODEAU

DECLARING THAT the Microsoft Corp. antitrust case is of "immense importance to the national economy," the government is pushing for a speedy review of the case by the U.S. Supreme Court. The industries most adversely affected by any delay and uncertainties are hardware and software makers, the government said in the latest round of legal arguments filed with the court last week.

But there is no uncertainty in the mind of Roger McFadden, manager of information strategy and architecture at Hoffman La Roche Inc., about how this case might affect his pharmaceutical company. He called it a "nonissue."

"Whether Microsoft as an organization continues as it is or whether it is ultimately split, our only concern would be the continuation of levels of support," said McFadden, whose Nutley, N.J.-based company relies heavily on Microsoft products. "We know the kinds of things that we need, and I don't think that we're too concerned from whom we get them," he said.

## Case Impact Varies

Robert Nipp, an information systems manager at Lubbock, Texas-based Rip Griffin Truck Service Center Inc., which operates a chain of service centers, said the case isn't having any impact on his information technology planning.

"What we got in place we plan on keeping in place," said Nipp, who uses Windows NT and Windows 98. He says he has no interest in Windows 2000. "It's unproven, and we have never been on the bleeding edge of technology," Nipp said.

On Tuesday, Microsoft will respond to the government's contention that this case requires "prompt and final resolution," in part so that the "computer and software industries can plan for the future."

This case will end up in the Supreme Court eventually, according to legal experts, who say the question now is if the U.S. Court of Appeals will be bypassed, as allowed by the 1974 Expediting Act.

The Supreme Court may decide within two months whether to take this case, analysts say. If that happens, a decision may take less than a year. But if the case goes to the Appeals Court, a final decision may take two years, experts speculate.

Although some end users see minimal impact from the case, it's different for vendors, said Rob Enderle, an analyst at Giga Information Group Inc. in Cambridge, Mass. Vendors are gambling on the trial's outcome. "Right now, they are enhancing their Linux plays because they are anticipating a much weaker Microsoft. If that is not the outcome, then those efforts and those people are exposed," Enderle said.

A delay works to Microsoft's advantage, said John Flynn, a former antitrust adviser to the U.S. Senate Judiciary Committee who now teaches at the University of Utah College of Law. "The longer you delay a case, the more you add to the belief that the industry is remedying itself," he said. In arguing against sending the case directly to the Supreme Court, Microsoft contends that the technical and legal issues raised need to be first sorted out by the Appeals Court.

The argument that Microsoft is an important case is "merely stating the obvious," said Hillard Sterling, an attorney at Gordon & Glickson LLC in Chicago. "What the government hasn't shown is that imminent Supreme Court review is necessary to preserve competition.

### Left or Right?

*Microsoft's antitrust case has reached a fork in the road.*

**GOVERNMENT'S GOAL:** Move case directly to Supreme Court and bypass potentially troublesome Appeals Court. Get quick decision while the facts are still fresh and reduce the risk of meddling from a new administration.

**MICROSOFT'S GOAL:** Drag it out, IBM-style, until industry changes make this case seem irrelevant. Hope for Bush election. Appeals Court review improves odds for reversal.

**WHAT'S NEXT:** Microsoft this week will rebut the government's argument. The Supreme Court is expected to decide whether it should take this case in about

# Court Favors Strict Surveillance Standards

*More cases will require search warrants*

BY ANN HARRISON

The Federal Court of Appeals for the District of Columbia ruled last week that law enforcement agents seeking to intercept data packets that combine addressing information and the content of communications must meet the higher legal requirements needed for a search warrant.

The decision casts doubts on the legality of the FBI's Carnivore Internet surveillance system. The FBI's use of Carnivore is approved under the less demanding standard of what's called a pen register order. The ruling will likely increase the number of cases in which government investigators must obtain search warrants to conduct surveillance activities, especially online.

"We are happy that the court has imposed strict legal limitations on law enforcement's use of these surveillance capabilities. And in doing so, we think the court has indirectly raised some serious legal questions about Carnivore," said David Sobel, general counsel at the Electronic Privacy Information Center (EPIC) in Washington. The FBI declined to comment on the ruling. But Steve Colgate, assistant attorney general and CIO at the U.S. Department of Justice, said he believes that the information collected with the Carnivore system will be admissable.

Colgate noted that the Justice Department is most concerned with the court's rejection of four additional surveillance requests that the FBI made to the Federal Communications Commission (see chart). "What the court has done is set these four major items aside and ask the FCC to reconsider them," said Colgate.

The court decision was issued in response to a challenge brought by EPIC, other privacy advocates and the telecommunications industry, which were seeking to overturn technical standards for surveillance imposed last year by the FCC. The FCC ruling was issued under the 1994 Communications Assistance for Law Enforcement Act (CALEA), which requires telephone companies to include surveillance capabilities in new digital phone systems, while at the same time upholding privacy.

In its decision, the court condemned what it viewed as the FCC's cursory consideration of privacy concerns.

The court did agree with the FCC that carriers should build into their networks the ability to locate signals from wireless phones but limited that requirement to the location of the antenna handling the call.

## Higher Requirement

The court also supported the FCC's stand that carriers shouldn't have to separate addressing information from the contents of the message in packet data. But the court ruled that the government must meet the higher requirement for content interception.

Tom Wheeler, president of the Cellular Telecommunications Industry Association in Washington, said the decision is a real victory for the privacy of cellular communications and will ensure that the FBI doesn't randomly sniff touch-tone codes used in wireless banking and stock trading.

*Bob Brewin contributed to this report.*

### Too Nosy?

*The Justice Department is most concerned with the court's rejection of these surveillance requests:*

**1) Post-cut-through dialed-digit extraction:** Requires carriers to use tone-detection equipment to generate a list of all digits dialed after a call has been connected.

**2) Party hold/join/drop information:** Includes telephone numbers of all parties to a conference call as well as signals indicating when parties join the call.

**3) Subject-initiated dialing and signaling information:** Includes signals generated by features such as call forwarding.

**4) In-band and out-of-band signaling:** Includes information about signals, such as busy signals, sent from the carrier's network to someone's phone.

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## BRIEFS

### Compaq Ends an Era With VAX Retirement

Compaq Computer Corp. is finally retiring the line of VAX servers it inherited when it acquired Digital Equipment Corp. The servers' death was announced in a letter posted last week on Compaq's VAX Web site and on the site's product information page. The letter said the company had "extended the VAX CPU technology as far as possible." It also noted that many users had already replaced their VAX machines with higher-speed Alpha-processor-based hardware.

### Kozmo.com Lays Off 275 Employees

Web-based one-hour delivery service Kozmo.com Inc. has laid off 275 employees and closed two Los Angeles distribution centers as it strives to improve its financial bottom line. The cuts were made possible by improvements in order-routing software and by cross-training workers to handle several different job functions, a spokesman said.

### Short Takes

LYCOS INC. reported strong results for its fiscal fourth quarter ended July 31. The company said the net profit for the quarter was $13 million, excluding one-time events. For the same period last year, the company posted a net loss of $3 million. . . . The U.S. Bankruptcy Court in Massachusetts denied a motion by Waltham, Mass.-based TOYSMART.COM INC. to approve a settlement the company reached with the U.S. FEDERAL TRADE COMMISSION that would allow Toysmart to sell its customer data. . . . The SECURITIES AND EXCHANGE COMMISSION has launched a probe into LEGATO SYSTEMS INC.'s financial revisions for each quarter in 1999 and the full 1999 fiscal year. Separately, Stephen Wise resigned as Legato's chief financial officer. . . . A former ORACLE CORP. vice president was awarded more than $2.6 million in compensation after a San Francisco Superior Court jury ruled that she had been wrongfully terminated by the company and its executive vice president. Oracle said it will appeal the decision.

# Lloyds Bank to Spend $24 Million on CRM

BY MARIA TROMBLY

Lloyds TSB Group PLC has said it will spend $24 million on a customer relationship management (CRM) system designed to integrate customer information from all aspects of its operations.

The retail bank — one of the four largest banks in the U.K., but no relation to insurer Lloyd's of London — said it will use Cupertino, Calif.-based Chordiant Software Inc. to develop a system that can connect its worldwide branches, call centers, wireless banking and Internet-only bank Evolvebank.com.

"We're transforming to become a much more customer-centric organization," said Igor Andonov, the bank's information technology director, in a presentation last Tuesday.

Bank spokeswoman Helen Thompson said the bank used New York-based Andersen Consulting to evaluate a number of CRM software providers, which will let the bank deliver personalized service to 16 million customers.

The first phase of the project will begin in the first quarter of next year.

CRM "is probably the single-biggest focus for all banks in the U.S. — and, I'm sure, around the world — because they see it as their major growth imperative," said George Barto, an analyst at Gartner Group Inc. in Stamford, Conn.

Rolling out a CRM service can be difficult, however, because of the many platforms and legacy systems most companies have built up over the years, said Paul Jamieson, an analyst at Lincoln, Mass.-based Gomez Advisors Inc.

That's why banks often go with a third-party vendor such as Chordiant, said Barto. ◗

# EU Plans to Approve Electronic Signatures

*OKs transatlantic bank group's system*

BY MARIA TROMBLY

THE European Union (EU) announced that it plans to approve an international electronic-signature system backed by a consortium of banks.

The EU's approval means it has decided that the consortium of competing banks isn't acting anticompetitively in developing the system and that it doesn't violate the EU's privacy laws.

The electronic signature system in question is one advocated by Identrus LLC, a New York-based joint venture that's backed by American and European banks, including ABN AMRO Holding NV in Amsterdam; Bank of America Corp. in Charlotte, N.C.; Barclays PLC in London; Chase Manhattan Corp. and Citigroup Inc. in New York; and Deutsche Bank AG in Frankfurt.

Identrus differs from other authentication systems, not only because of its international scope and major-player backing, but also because it provides stricter security measures and payment guarantees, according to Andrew Bartels, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Identrus currently has no users, though it does expect some banks in Germany and the Netherlands to deploy the technology in October, according to company spokeswoman Laura Rime.

Identrus is backed by more than 20 banks, most of which are based in the U.S. But it's an open system that any financial institution can join, as long as it meets certain minimum criteria, such as being regulated.

Rimes said each bank will pay a membership fee to Identrus and will issue smart cards and readers to businesses that want to use the system.

Identrus would then collect a small fee — just a few cents, according to Rimes — for every transaction that goes through.

The company's nearest competitor is the Washington-based American Bankers Association's TrustID system, which is limited to the U.S.

Other companies, including VeriSign Inc. in Mountain View, Calif., that offer alternative authentication schemes, already have a head start. ◗

# Cap Gemini Spins Off ASP, Systems Integration Unit

BY JULEKHA DASH

Just months after Paris-based consulting firm Cap Gemini Group SA purchased Ernst & Young Consulting Services, the combined firm, Cap Gemini Ernst & Young U.S. LLC, last week spun off its systems integration and application service provider (ASP) business as an independent company.

Dave Boulanger, a research director at Boston-based AMR Research Inc., said independence would let the company move more nimbly to expand its ASP business than if it were tied to a larger consulting firm. By leveraging its relationship with Cap Gemini Ernst & Young, it could target enterprise ASP customers, he added.

Jim Hunt, president and CEO of EYT, the new name for the spun-off unit (formerly Ernst & Young Technologies), said that the parent company's decision was a financial one. As Chantilly, Va.-based EYT tries to expand its ASP business, it will likely face losses in the near term that would have dragged down revenue at Cap Gemini Ernst & Young. Also, as an independent, it's more likely to attract investment from outside, Hunt said.

Under its arrangement with its former parent, EYT will serve Cap Gemini Ernst & Young customers that have less than $1 billion in revenue that want to buy ASP services for applications from Lawson Software in St. Paul, Minn., and Great Plains Software Inc. in Fargo, N.D., said Craig Johnson, director of ASP solutions at Cap Gemini Ernst & Young.

EYT's relationship with Lawson, as well as with Cap Gemini Ernst & Young, makes it more attractive as a provider of ASP services than other candidates, according to Patrick O'Neill, e-commerce marketing manager at Web-based water-systems vendor H20products.com Inc.

H20products.com is a subsidiary of Blake Equipment Co. in Bloomfield, Conn., which uses Lawson's financial applications and back-office systems.

Although his company has no immediate plans to hire an ASP, O'Neill said, it would more likely choose an ASP that has a relationship with a reputable consulting firm.

EYT's partnership with its former parent company would enable it to host the more complex, customized applications large companies demand, said Julie Giera, an analyst at Giga Information Group Inc. in Cambridge, Mass.

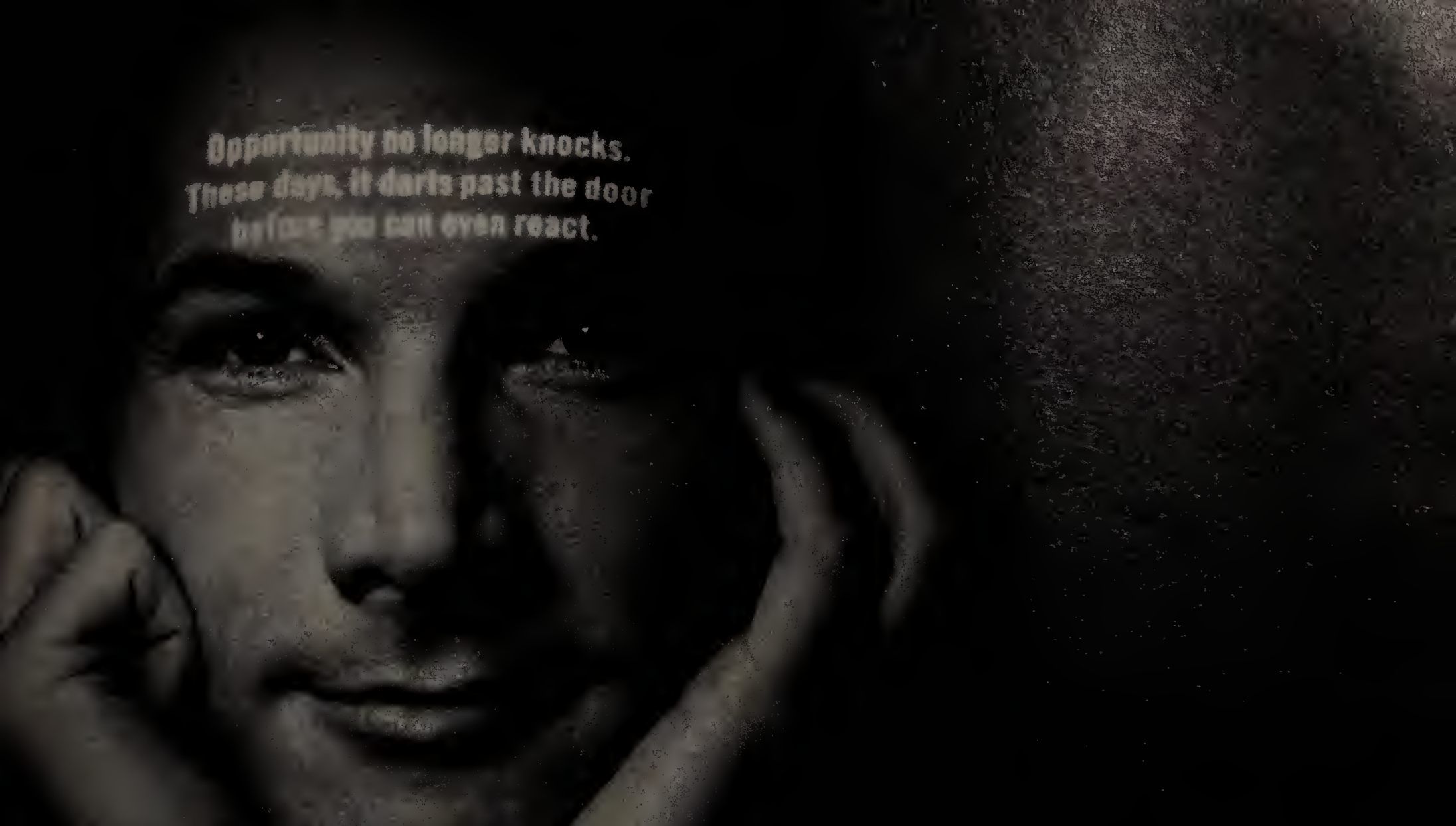
EYT has attracted more than $50 million in capital from investors. It had revenue of $77 million last year. ◗

JUST THE FACTS

### Standing Alone

*Details of the EYT spin-off:*

- Will operate as stand-alone ASP and systems integrator
- Has 200 employees and is adding 30 hires per month
- Will be the ASP of Lawson and Great Plains software for Cap Gemini Ernst & Young clients that have less than $1 billion in revenue

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# So-Called Napster Fans Crack Web Sites to Get Message Out

*Experts say attacks are likely just pranks*

BY JENNIFER DISABATINO

SEVERAL WEB SITES around the world were reportedly broken into and changed last week by a cracker bent on calling attention to the fight between the music industry and Napster Inc.

A manifesto of sorts, titled "The Save Napster Hack Attack," was posted on the cracked sites in support of the Redwood City, Calif., digital music-swapping Web site.

Though all the sites were apparently restored within 24 hours, a cached version of the posting is visible on Attrition.org, a site that collects information about Web site attacks.

Each of the hacked sites was signed by "pimpshizpimpshiz@aol.com," who claimed responsibility for the attacks in e-mail to *Computerworld*.

"I was moved to do this because I know a lot of people in real life who use Napster and still buy CDs very often — it's just not fair," the hacker wrote.

FBI spokeswoman Debbie Weierman said Thursday that the agency's National Infrastructure Protection Center is "looking into the reports."

A federal judge last month ruled against Napster in a lawsuit filed by record companies represented by the Washington-based Recording Industry Association of America, ordering Napster to stop making copyrighted materials available on its site. That order was stayed pending appeal.

Attrition.org, which calls itself a computer-security Web site, claimed to have verified hacks to sites owned by Honda Motor Co., Mitsubishi Electric Automation Inc., TDK USA Corp. and 800shoes.com. Company representatives didn't return calls for comments.

Ben McLaren, president of Models.Net Inc. in Tampa, Fla., told *Computerworld* in an e-mail that his company's site was among those hacked.

"It sounds like we have a few kids running amok," said Eric Hemmendinger, an analyst at Aberdeen Group Inc. in Boston. In fact, the "Save Napster" post was signed, "Hi Mom!"

"This isn't a security story. This is really a story about how the music industry is dealing with its former reluctance to work with the Internet," Hemmendinger said.

It's not even about Napster, said Ira Winkler, president of the Internet Security Advisors Group in Severna Park, Md., and author of *Corporate Espionage*. "A lot of hacking goes on because people want to hack, and then they find a cause later," Winkler said. "The issue is that now people are just hacking Web sites and then saying they are doing it to support Napster." ◗

# Desktop Linux Receives Boost With Gnome

*Extends graphical user environment*

BY DOMINIQUE DECKMYN

Vendors including Compaq Computer Corp., Hewlett-Packard Co., IBM, Red Hat Inc., Sun Microsystems Inc. and VA Linux Systems Inc. joined at LinuxWorld in San Jose last week to form the Gnome Foundation and extend the Gnome graphical user environment for Linux into a full-blown competitor to Microsoft Corp.'s Windows and Office.

The fledgling organization announced that Sun's StarOffice productivity suite and the open-source Mozilla browser will become part of Gnome's Bonobo component architecture, which is based on the Common Object Request Broker Architecture. Gnome Foundation members said the availability of these components would help software vendors create Linux applications.

Longtime Linux user Mike Prince, vice president and CIO of Burlington Coat Factory Warehouse Corp. in Burlington, N.J., applauded the Gnome plans. "We've deployed a lot of Linux desktops [in stores], and the reason [for choosing it] was we wanted to deploy a stable, low-maintenance, reliable environment in sort of an industrial setting, and it proved to be all these things," said Prince. An improved Gnome would add "a great graphical environment" to that equation, said Prince.

Analysts said what Linux and Gnome really need to become serious competitors on the enterprise desktop PC are more applications, specifically, a software suite that offers perfect support for Microsoft Office file types.

"There still isn't 100% compatibility between StarOffice and Microsoft Office [documents]," said Al Gillen, an analyst at International Data Corp. in Framingham, Mass. "We do not expect to see Linux rise up and threaten Windows within our forecast period, which is through 2004."

## A Windows World

*1999 desktop operating system market share, worldwide:*

| | |
|---|---|
| Windows: | 87% |
| Mac OS: | 5% |
| Linux: | 4% |
| Others: | 4% |

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

But Stacey Quandt, an analyst at Giga Information Group Inc. in Santa Clara, Calif., said that because of their componentized architecture, Gnome and Linux may emerge as a strong presence on Internet appliances. They are unlikely to take over corporate desktops, said Quandt, but are likely to be successful in situations like point-of-sale terminals.

HP and Sun increased their support of Gnome by also saying they would adopt it as the default desktop environment for their versions of Unix, replacing the Common Desktop Environment. ◗

*Continued from page 1*

## Linux

Prince is an early Linux supporter but uses IBM Intel-based NUMA-Q servers (acquired with last year's purchase of Sequent Computer Systems Inc.) running the Dynix/ptx Unix variant in his data center. "Dynix/ptx was always known as a killer high-end operating system — it will run enormous user loads — but the downside [is] there have been relatively few applications written for it. That problem is now eliminated," said Prince.

E-commerce- and Internet-related applications will increasingly be developed for Linux first, analysts agreed. Analyst George Weiss at Gartner Group Inc. in Stamford, Conn., said support for Linux binaries on proprietary Unix environments provides customers with a good way to start experimenting with Linux applications.

"HP-UX is a hardened kernel; it's proven. If I were going to test the waters with Linux, maybe that's the way I'd do it," said Weiss.

### New Direction for Linux

Seeing Linux applications on servers that aren't running the Linux kernel is a surprise to that kernel's chief developer, Linus Torvalds. "It used to be the other way around," said Torvalds, speaking with *Computerworld* on the LinuxWorld show floor in San Jose last week. "A few years ago, we had to find a way to run [The Santa Cruz Operation Inc.] applications on Linux."

"Linux is really becoming this universal set of [application programming interfaces] and [Application Binary Interfaces] in the Intel space that people can develop against," said Prince. "When you are talking about large back-end applications, Solaris, HP-UX or Dynix/ptx really add some value. But on the other hand, Linux is becoming the first port environment for almost everybody in the Unix space."

"It's a very healthy direction for the the industry to be going in," said Mark Ryan, chief technology officer at Weather.com, the Atlanta-based online service of The Weather Channel Enterprises Inc.

A lot of the online weather service runs on Intel-based Linux servers from IBM, though many of the back-end applications are hosted on Unix servers from Sun Microsystems Inc. Integrating native support for Linux application on high-end Unix platforms will give users far more scalability, Ryan said. And people with Linux skills are easier to find than those with Unix skills today, he added.

Running Linux on Unix boxes "is appealing because it allows us to find the best processing platform," said Mike Anderson, vice president of information systems at The Home Depot Inc. in Atlanta. "We can focus more on getting the best [return on investment] from a hardware standpoint from many vendors."

But, Weiss said, Unix vendors are walking a thin line. "They must make sure not to send the message to customers that they should prepare to move off proprietary Unix," he said.

Stacey Quandt, an analyst at Giga Information Group Inc. in Santa Clara, Calif., said Unix vendors are hedging their bets in case Linux beats their proprietary operating systems in the marketplace. And for users, "it's a stopgap until Linux has the high-end features customers need," Quandt said. ◗

# Global Web Sites Prove Challenging

## *U.S. companies struggle with foreign languages, trade laws, cultural gaffes*

BY MITCH BETTS, CAROL SLIWA AND JENNIFER DISABATINO

IN THE U.S., THE "shopping cart" icon for e-commerce makes perfect sense. But in Europe, many shoppers use baskets, not carts.

In the U.S., a Web site can use the OK hand gesture as an icon. But in Brazil, it means the same as the middle-finger gesture in the U.S.

Oops.

As some U.S.-based companies rush to set up global Web sites, they are struggling to handle multiple languages, comply with foreign trade laws and avoid cultural gaffes.

"Running a site in multiple languages is easier said than done," said a recent report by Cambridge, Mass.-based Forrester Research Inc. For example, many e-commerce software applications can't handle Asian languages, where alphabets of up to 6,000 characters require support for a universal character standard called Unicode.

### Sense and Sensitivity

It's also tricky accommodating multiple currencies, international sales taxes, local holidays and foreign addresses. And shipping products overseas without considering customs regulations and tariffs can spell trouble.

"If you don't play by the rules, goods can sit — and sit and sit — at the border warehouse for a while," said Mary Lou Fox, chief operations officer at Silver Spring, Md.-based NextLinx Corp., which helps e-commerce firms comply with trade regulations.

Even savvy multinational companies can stumble over things such as forgetting about language dialects.

The international delivery company DHL Worldwide Express once used classic German on Web sites for customers in Germany, Austria, Switzerland and Belgium.

"But Austria, Switzerland and parts of Belgium speak a different sort of German," said Colum Joyce, electronic-commerce strategy manager at DHL in Brussels.

Now DHL has local residents check the sites to make sure they make sense.

In another case, data transmissions would suddenly end for DHL customers entering an address with an umlaut — the two dots over certain vowels in German. It turned out that the umlaut was the ASCII representation for "end transmission," Joyce said. DHL fixed the problem with a filter that recognizes umlauts.

A Web site's colors need to be carefully considered, too. "When we were designing our first site, it was all white, and [then] we realized that white was the color of mourning in China. So it was something we couldn't possibly use," said Joyce, whose staff finally settled on a "very off-white."

DHL's central Web site directs visitors from 270 countries — from Albania to Zimbabwe — to the appropriate Web content. But that degree of globalization is unusual.

Forrester reported that 63 of the Fortune 100's Web sites are available only in English. Yet analysts agree that English will cease being the Web's dominant language in a few years.

By 2004, 50% of all online sales will occur outside the U.S., meaning that Web site globalization is moving from luxury to necessity, said Forrester analyst Eric Schmitt.

But it's still a daunting task. Besides the language, cultural and logistics issues, Web sites must comply with Europe's privacy laws, which restrict the collection of personal data. Other "gotchas" include advertising restrictions and consumer protection laws. For example, in Germany it's illegal to directly compare your product with a competitor's. Toys sold online to Swedish consumers may need to meet Swedish safety rules, and online pharmacies could be regulated by the international equivalents of the U.S. Food and Drug Administration.

Foreign labor practices are challenging, too. "In Europe, if you want to recruit people, they require a two- to three-month notice period before they can leave their company," said Joshua McCarter, vice president of international development at Autobytel.com Inc. in Irvine, Calif. Autobytel.com, which is expanding in Europe, Japan and Australia, has started a "knowledge database" about its globalization efforts "to help us avoid any of the implementation mistakes we may have made, as we go from country to country," McCarter said.

Autobytel has discovered that different cultures may require radically different business models for e-commerce. Online auctions for selling cars haven't been successful in the U.S., for example. "But in Holland, people have been buying at auctions for the last 500 years, and car auctions are successful," said McCarter.

Pioneer users say that staying abreast of new laws, avoiding offensive messages and managing global content is a never-ending process.

The biggest challenge at Amway Corp.'s Nutrilite.com unit, which sells vitamin and mineral supplements, is updating the content on its Web sites in 10 countries. "Once you launch a site in China, you just can't forget about it," said Neal Mercado, Nutrilite's program marketer in Ada, Mich.

### Question of Content Control

Mercado said he would like to develop "a process where you can somehow automate the translations and the updates, especially where you control the sites from the U.S."

In fact, analysts say, a big political issue at many companies is whether Web development and content management should be centralized at headquarters or controlled locally in the individual countries.

DHL initially let local units run their own Web sites. But the company realized that it needed to take global responsibility for critical services such as package tracking to ensure that customers get a consistent presentation and level of service at all of its Web sites, according to Joyce.

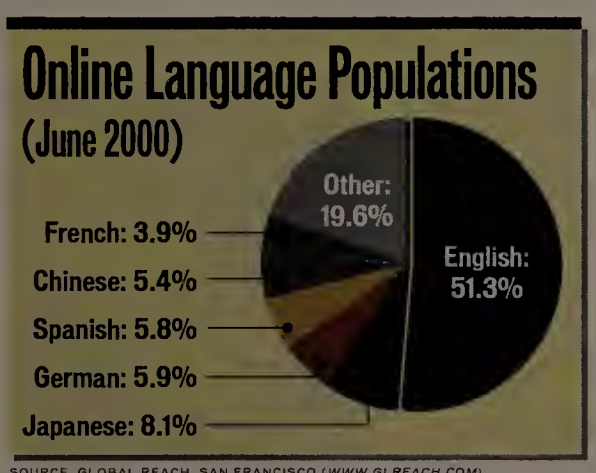
DHL found that multitier, object-oriented applications — with presentation, business logic and database layers — made far more sense than the monolithic systems it created in the past. "[We had] huge stovepipes of applications. None of them talked to each other," Joyce said.

Each DHL site now has three layers of control: local offices, which take responsibility for their "screen real estate" and locally developed services; regional units that deal with trade regulations; and global headquarters, where the central staff makes sure all the sites adhere to companywide standards for service.

"We play hardball with people who don't respect [the standards]," Joyce said. "We impose an awful lot of discipline to ensure that they do not muck around or do anything that undermines the global service," because DHL once had some frustrating experiences with local actions.

"One of the problems that we found with the Web was that it gave people so much innovative capability at a local level that maintaining control became a problem for awhile," Joyce said.

"These are hard-learned lessons," he added. "There were a lot of ulcers and an awful lot of Pepto Bismol being drunk through this process."




SOURCE GLOBAL REACH, SAN FRANCISCO (WWW.GLREACH.COM)

## Worldly Advice

*Tips from the experts on Web site globalization:*

**Pick one country to start with**, perhaps in Europe. Don't try to go live with eight languages at first.

**Make sure the foreign Web site** isn't underfunded. It must compete with well-funded start-ups in that country.

**When purchasing software**, consider whether it can handle Asian languages in the future.

**Find translation vendors** with in-country translators who have experience with your industry's jargon.

**For Arabic and Hebrew sites**, you may need to buy Web development tools that can handle bidirectional text.

**Don't turn foreign-language versions** into graphics files instead of using text to present information. The big images take three to 10 times longer to load and look a bit fuzzy.

**Make sure your foreign-language sites** are listed in the 500 non-English search engines on the Web.

**Post a legal disclaimer that says your Web site** is subject only to the jurisdiction of U.S. courts. That could prevent you from being hauled into a foreign court.

SOURCES: INTERNATIONAL ERETAIL ASSOCIATION, PLYMOUTH, MASS.; FORRESTER RESEARCH INC., CAMBRIDGE, MASS.; MEDIASYNC INTERNATIONAL INC., WASHINGTON; GORDON & GLICKSON LLC, CHICAGO

# Windows 2000

## What is Windows 2000 Advantage?

Windows 2000 Advantage is the partnership among Microsoft, Compaq and Computerworld Enterprise Business Solutions to inform IT leaders about Windows NT and Windows 2000 technology by providing timely, useful information — in print and online — for planning and deploying Windows NT and Windows 2000 with Compaq services and solutions.

## Online This Week

### Windows 2000 SP1 Reduces Lifecycle Maintenance Cost

Now available, the release of the first service pack for Windows 2000 (SP1). It includes an update that eases the upgrade process and simplifies deployment for customers currently planning their upgrades.

### Compaq and Microsoft Preparing for 64-bit Windows 2000 Systems

Late this year the first Windows 2000-based Compaq servers that work with Intel's 64-bit Itanium processors will hit the streets, a welcome development for user hitting performance bottlenecks. 64-bit processing will be a boon for users that need to support large databases, e-business and other applications that require heavy transaction processing.

### Microsoft Ships Windows 2000 Datacenter Server to Program Partners

Microsoft announced the release to manufacturing of the Microsoft Windows 2000 Datacenter Server, completing the product family for Windows 2000. Complete product and services based on Windows 2000 Datacenter Server and Windows Datacenter Program are expected to be available to customers this fall.

**Quickpoll** **If you are a user of Windows 2000, do you expect to eventually migrate to 64-bit computing?**

Cast your vote now at

www.Windows2000Advantage.com.

Check out the current results:
*Base: 251* ▶

Microsoft

COMPUTERWORLD

# PRIMUS Telecommunications Selects Compaq to Launch U.S. Data Center

PRIMUS Telecommunications Group Inc. a global facilities-based total service provider offering data, Internet, e-commerce, Web hosting, enhanced applications and voice services on a bundled basis, has launched a data center at its headquarters.

PRIMUS picked Compaq to provide professional services and an integrated application service provider (ASP) infrastructure. In so doing, Compaq deployed Windows 2000, which enables PRIMUS to offer a portfolio of ASP services and tools for businesses to maximize the benefits of the Internet.

The data center platform includes Compaq Distributed Internet Server Array (DISA) architecture and custom software from Compaq Professional Services. The Compaq DISA architecture provides an ideal platform for high availability and scalability for Internet applications. The architecture supports load balancing and linear scalability through the simple addition of best-in-class, rack-mounted, industry standard Compaq ProLiant DL380 and ProLiant 5500R servers.

A total of 2.4 terabytes is available in four storage area network (SAN) pods using the Compaq StorageWorks Enterprise Backup Solution. Device sharing features allow multiple servers attached to a Fibre Channel Arbitrated Loop to share SCSI tape devices attached to the same loop. The servers can transfer data directly to the attached tape devices equaling the high-data transfer rates found in a direct-attached environment.

Compaq Professional Services also developed a custom Web-based application known as the Compaq ASP Framework that will enable PRIMUS to add and fully integrate new applications simply and easily while retaining an easy to use, automated customer experience, including auto-provisioning and management, and a unified user membership store.

The new data center also features high-speed tier 1 access to the Internet with connectivity to PRIMUS' global fiber optic network. ASP applications currently available include e-mail, Web hosting, e-commerce, Domain Name Service (DNS) registration, Web-based customer installation tools, installation wizards and secure business customer account management.

"We believe the small- and medium-sized market has been overlooked and under served," said Joe DiMaio, general manager of SME Services for PRIMUS. "An Internet strategy is just as important to the small- and medium-sized business as it is for the large multinational company. We selected Compaq, an industry leader, to enable PRIMUS to offer a comprehensive suite of services designed especially for the SME market. With Compaq's solutions, we were able to accelerate our time to market."

"Compaq is committed to providing service providers with industry leading, NonStop e-business infrastructures, services and solutions," said Keith McAuliffe, Compaq vice president and general manager, Service Provider Business Unit.◗

For the full text, visit **www.Windows2000Advantage.com.**

ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows NT and Windows 2000 with Compaq Services and Solutions

▶ **Book Review**

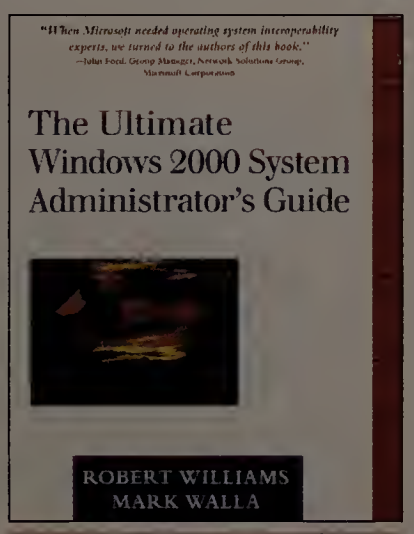
# The Inside Story on Windows 2000

## *The Ultimate Windows 2000 System Administrator's Guide is a Helpful Resource for Those Implementing Windows 2000*

*By Deb Murry*

*The Ultimate Windows 2000 System Administrator's Guide* is appropriately named. It is the definitive reference for administrators and IT managers charged with Windows 2000 deployment and management. However, this book is also recommended to a much wider audience. Anyone needing to understand how to use Windows 2000 basic and advanced features will find this a valuable resource.

Authors Walla and Williams have written a book that uniquely addresses the needs of both novice and extremely advanced users. This is accomplished by providing a conceptual context for each topic prior to delving into no non-sense "how to" text and practical real world examples.




**Book title:** *The Ultimate Windows 2000 System Administrator's Guide*

**Authors:** Robert Williams & Mark Walla

(Addison Wesley 2000)

### A Clear Understanding

Competitive Windows 2000 books do an adequate job of explaining basic administrative tasks like file server management, but provide only high-level review of advanced features. The Ultimate Windows 2000 System Administrator's Guide handles the basic functions in a clear and readable fashion and goes much further. The authors understood that as an enterprise operating system a text on Windows 2000 must cover the full range of complex topics. For example, two chapters are dedicated to the theory and practical use of Active Directory. Over 300 pages are spent on security-related issues including Kerberos authentication and the public-key infrastructure. Likewise, enterprise networking, implementation of virtual private networks and IPSec, terminal services and IIS have been extensively reviewed. New features get particularly strong coverage, but standard operations are not overlooked such as user administration, network management, clustering and data storage management. The text is rounded out with a reference guide to common commands and an extensive glossary.

The book is written by subject matter experts. According to Microsoft's John Ford, group manager of Network Solutions, "when Microsoft needed operating system interoperability experts, we turned to the authors of this book. Their expertise is now enhanced with this authoritative book."

If you are a CIO, a new administrator or anyone in between, this is the one book that you must have one your shelf. We concur with Dan Kusnetzky, IDC vice president of Operating Environments, that this book "will certainly be useful addition to the library of system administrators wishing to make the most of Microsoft's new operating environment."

The Ultimate Windows 2000 System Administrator's Guide is available at most book stores or on-line through companies like Amazon.com and barnesandnoble.com. ◗

For the full text, visit **www.Windows2000Advantage.com.**

**www.Windows2000Advantage.com**

## Point of View

### Compaq-Microsoft Relationship Driving Windows 2000 Success

*By Mary Ryan Garcia*

One of the key factors behind the strong debut of Windows 2000 is the Compaq-Microsoft Frontline Partnership. Compaq was the primary supplier of platforms upon which the Windows 2000 operating system was developed.

"The Windows 2000 Frontline Partnership is actually one of the longest standing coalitions in the industry," says Urs Renggli, Compaq's manager, Microsoft Software Marketing. Some benefits of the Frontline Partnership are lower total cost of ownership of the joint platform based on price/performance, plus reliability, availability and manageability.

Microsoft's Bruce Olson, account manager, high-end servers for Compaq, says customers want the reassurance of knowing the two companies are working hand-in-hand to bring Windows 2000-based solutions to market.

Key to the Windows 2000 Frontline Partnership is that Windows 2000 was developed on Compaq platforms. "This means as our customers go to deploy Windows 2000, it is going to work extremely well, have the highest degree of compatibility, and operability with the ProLiant, Deskpro, iPAQ and Armada platforms," says Renggli.

But the Windows 2000 Frontline Partnership faces challenges. "I think the biggest challenge is getting people to move out of evaluation and into deployment," says Renggli.

"We are working to jointly improve our service delivery capability," adds Olson. "We are sharing technology ideas on how to build the best tuning and optimizing for our joint platforms. Information learned from programs like Windows 2000 Datacenter will be shared throughout the Microsoft family."

In addition to Windows 2000 Datacenter, future innovations for the Windows 2000 Frontline Partnership include the 64-bit version of Windows 2000 and the next generation of Windows 2000. "Compaq continues to work hand-in-hand with Microsoft's engineering and marketing teams to ensure the highest reliability and performance of these new operating environments on Compaq hardware," Renggli notes.

For the full text, visit www.Windows2000Advantage.com.

For more inside, hands-on Windows 2000 information, go to

GO

# Nasdaq Unveils Improved Front-End Market System

*But SuperMontage may pose a threat to Instinet, other networks*

BY MARIA TROMBLY

NASDAQ STOCK Market Inc. unveiled a new front end this week that promises to give market participants more information — and more tools with which to use that information.

But some Nasdaq participants — particularly electronic-communication networks (ECN) such as New York-based Instinet Corp. — have argued that the new system will be unfair to the ECNs.

SuperMontage promises to offer anonymity, deep market information and the ability for brokers to separate their own trades from those they execute for customers — all features that had previously been offered only through ECNs.

The Securities and Exchange Commission (SEC) will wait until the end of this month for public comments about SuperMontage and then, barring further amendments, will decide whether or not to allow Nasdaq to go ahead with it sometime in the next few months, according to SEC spokesman John Heine.

If SuperMontage is approved, the system could be up and running by the end of next year.

"What you're seeing here is one more step towards a better and more perfect marketplace," said Frank Zarb, chairman and CEO of the National Association of Securities Dealers (NASD), Nasdaq's parent organization. "We're moving in that direction, and nothing is going to stop it — no group is going to stop it."

But according to some ECNs, the NASD is abusing its regulatory power to tilt the playing field in Nasdaq's favor.

"In our view, the NASD should devote its efforts to projects that benefit investors ... instead of projects like the SuperMontage that exclusively serve its commercial interests," Instinet CEO John Oddie told the SEC.

According to Deborah Mittelman, Instinet's vice president of execution services, the main problem with SuperMontage is that Nasdaq becomes both a competitor and a regulator.

By law, brokers are required to give their customers the best possible prices. Brokers who use ECNs to trade instead of SuperMontage may be forced to jump through more regulatory hoops to prove that they have done so, according to Mittelman.

Analysts said that ECNs might, in fact, lose revenues under SuperMontage.

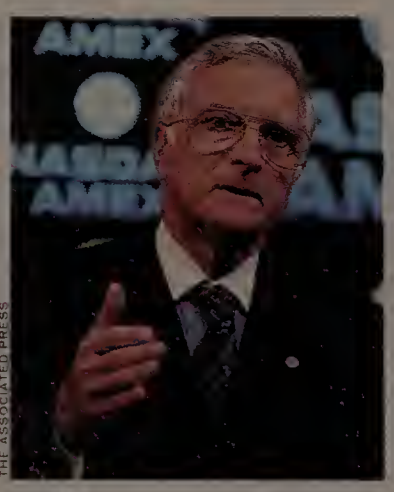
"The ECNs are justified in their concerns," said Larry Tabb, an analyst at Needham, Mass.-based TowerGroup. But he added that although ECN revenues might be hurt under the new system, it would be good for the market as a whole.

"It seems like a no-brainer to us," said Brian Borders, president of the Association of Publicly Traded Companies, a trade association that represents mostly small to midsize corporations.

> The NASD should devote its efforts to projects that benefit investors.
>
> JOHN ODDIE, CEO, INSTINET CORP.

He said SuperMontage will lead to a more open market, greater stability and lower capital costs for companies that raise money by selling stock to the public.

"ECNs compete by innovating in the securities markets," Borders said. "We like the fact that the other market participants innovate in ways that raise the level of competition. Now I expect that the ECNs will put some of the money they're making to work and raise the level of technology."




THE ASSOCIATED PRESS

**FRANK ZARB, CEO of NASD, said the new front end is another step toward a better marketplace**

# Online Furniture Store Living.com Closes

*Lack of continuing capital investment sinks Texas retailer*

BY TODD R. WEISS

After just 13 months in business, including three months as an online partner with Amazon.com Inc., Internet furniture store Living.com Inc. closed last week, citing a lack of continuing capital investment.

The Austin, Texas-based online retailer posted a terse message on its Web site to announce the closing. It advised customers with pending orders to continue to visit the site to learn the status of their orders. "We regret that circumstances beyond our control have forced us to discontinue operations," the note said.

In a statement posted on Living.com's site, Shaun Holliday, the company's CEO, said the action came because "the recent downturn in the capital markets has substantially impaired our ability to raise the capital required to achieve profitability. After exhausting all apparent alternatives, we have no choice but to file Chapter 7." All 275 workers were laid off as a result, and the phones were disconnected last week.

In May, Amazon.com announced its partnership with Living.com, touting a new "Home Living" tab on Amazon's home page that would lead customers to Living.com's furniture products. That $145 million deal, which required Living.com to pay Amazon $29 million annually for the tab, helped seal the company's fate, said Jeff Quinn, an analyst at Gomez Advisors Inc. in Lincoln, Mass.

"They had chosen some very expensive deals at a time when [investment] cash was freely available," Quinn said. "Today, that is obviously not the case."

Seattle-based Amazon could not be reached for comment.

# Mining and Metals Marketplace Picks SAP/Commerce One

BY TODD R. WEISS

After three months of evaluating vendors, the Mining and Metals Procurement Marketplace last week announced the selection of SAP AG subsidiary SAPMarkets Inc. in Palo Alto, Calif., and Commerce One Inc. in Pleasanton, Calif., to put its operations online.

The marketplace (*www.mmprocurement.com*) seeks to become a global exchange that will allow more efficient and less costly equipment and supplies procurement for mining and metals companies.

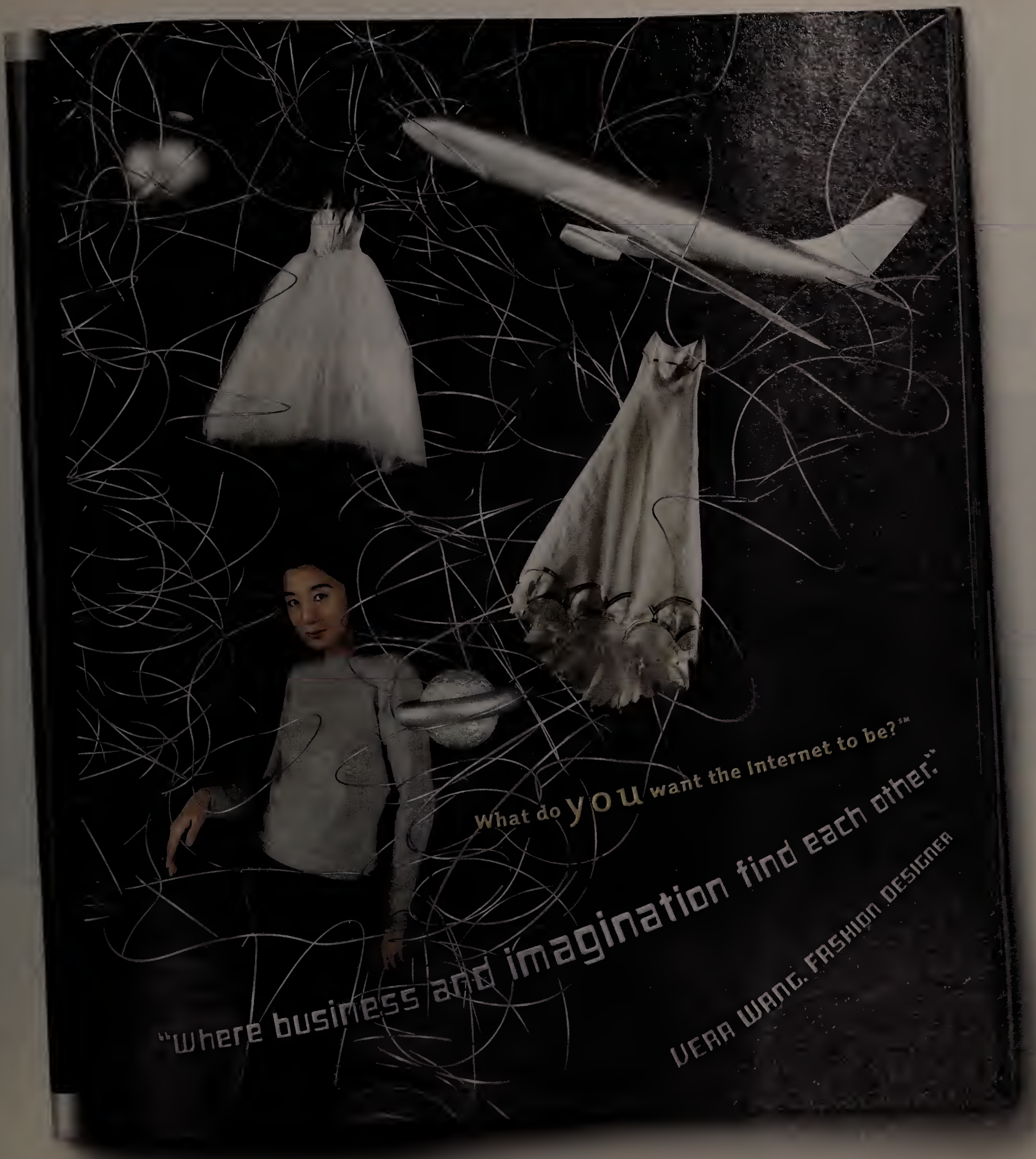
Fifteen metals and mining companies, including Pittsburgh-based Alcoa Inc. and De Beers Consolidated Mines Ltd. in Kimberley, Northern Cape, South Africa, as well as a financial services firm, are its founding members.

Kit Robinson, a spokesman for Commerce One, said the marketplace will be operational in the fourth quarter. The deal marks the second such marketplace created by Commerce One and SAPMarkets since the two companies formed an alliance in June.

However, analysts note that while the deal may be good for SAP and Commerce One, the metals and mining exchange market is becoming crowded with players, including Pittsburgh-based MetalSite, an industry leader.

Ronald Exler, an analyst at Robert Frances Group Inc. in Westport, Conn., said such marketplaces involve many tricky issues that have nothing to do with the technologies used to create them, including how they will make money and how they will avoid antitrust concerns.

Analyst Laurie Orlov at Forrester Research Inc. in Cambridge, Mass., said the deal fills service voids at both SAPMarkets and Commerce One but that a shakeout will eventually come to this niche. "The announcement of another one is kind of ho-hum as far as I'm concerned," Orlov said. "There can only be so many of these [deals] in any industry."

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# When It Comes T
# eTrust Can Prot

It's that sinking feeling in your stomach. That look your face makes every time you read a story about a disastrous corporate security breach. It's that nagging fear that won't go away no matter how many times you tell yourself there's nothing to worry about. Because there is, security is the number one concern of every IT professional for good reason. The good news is that there's a proven solution you can trust.

## Without Bullet-Proof Security, Successful eBusiness Is Impossible

The only thing bigger than the opportunity that comes with putting your business on the Web is all the risk that goes with it.

Undetected attacks can strike at any time, from anywhere, in a mind-boggling variety of forms. Most sites can't even track every attempt. And new threats are developed every day, all over the world.

Without the right protection, eCompanies risk losing everything: data, customers, revenue, and more.

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Online business through eCommerce, corporate intranets, partner-to-partner transactions

on extranets and websites, as well as their supporting enterprise-wide assets — all need to be secured. Protecting the integrity and availability of intranet information is critical to all organizations.

Web-enabled business applications open up all of your back-end and legacy systems to the world.

Unfortunately, in the race to become Web-enabled, security has taken a back seat. IT managers often give themselves a false sense of security with a standalone or partial security solution. They forget that security is only as strong as its weakest link and that eCompanies need an integrated and comprehensive security solution that provides best-of-breed functionality.

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*According to "Internet Security Software: 1999 Worldwide Markets & Trends," by IDC.

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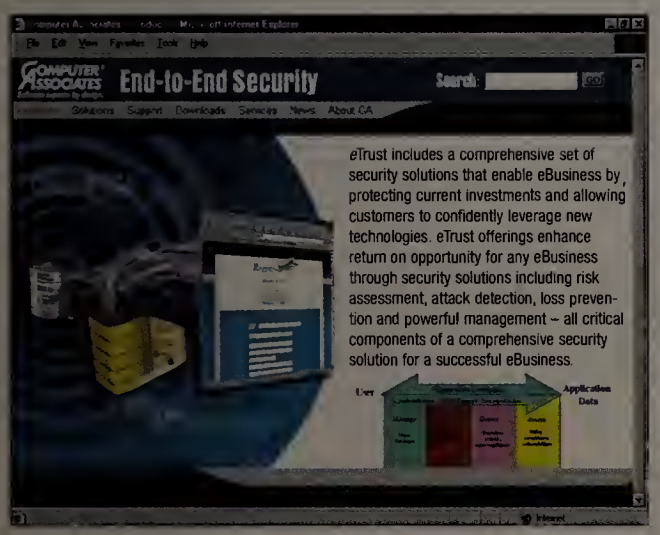


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# Government Diversifies Sourcing of Supercomputers

BY PATRICK THIBODEAU

In the Microsoft Corp. antitrust case, the government is trying to bring diversity to the PC operating system market through litigation. But one federal agency is using money rather than legal action to help ensure competition in an area of computing important to academic and industrial research: supercomputing.

When the National Science Foundation (NSF) in Arlington, Va., selected Compaq Computer Corp. this month to build its most powerful supercomputer to date, the NSF said it picked the firm that submitted the best proposal. The NSF also said that by choosing Compaq, it promoted diversity in supercomputing applications. That funding approach may help companies that are seeking more power for industrial and research applications, experts said.

"You want some diversity and competition in the program.... You don't want everything stacked up in one place," said Bob Borchers, director of the NSF's division of advanced computational infrastructure and research. "On the other hand, if you have too many mouths to feed, it's very, very hard to keep them all at the state of the art."

Compaq will build a 6-teraFLOPS (6 trillion floating-point operations — or calculations — per second) computer at the Pittsburgh Supercomputing Center under a $45 million project approved by the NSF, which said the new machine could be the fastest civilian supercomputer.

Different systems are in use at the San Diego Supercomputer Center (SDSC) at the University of California and the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign. SDSC has an IBM machine operating at about 1 teraFLOPS (TF), and NCSA has a Silicon Graphics Inc. system operating at less than ITF, said Borchers.

## More Benefits of Competition

"I think there is always a benefit for the government to having competition in the marketplace," said Tom Tecco, director of global computer-aided engineering test systems at General Motors Corp. in Detroit. While price and performance are affected, different views on technical evolution can also be developed, he said.

"If they can show how to do new science on this type of machine, it will be a major step forward in applying supercomputers to industrial problems," said Earl Joseph, an analyst at International Data Corp. in Framingham, Mass.

The Pittsburgh center will have a network of 682 Compaq AlphaServers, each of which will contain four Alpha processors. The system will run Compaq's Tru64 version of Unix.

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# BRIEFS

## Key Committee Clears Verio Acquisition

A federal committee has given the green light to the acquisition of Englewood, Colo.-based Internet backbone and Web-hosting company Verio Inc. by Tokyo-based NTT Communications Corp., according to sources who declined to be named. After President Clinton receives the recommendation of the congressional Committee on Foreign Investment, he'll have 15 days to approve or reject the deal. The acquisition, valued at $5.5 billion when it was announced in May, has been delayed several times by the U.S. government's probe into its national security implications.

## Nortel to Buy Sonoma In $540M Stock Deal

Nortel Networks Corp. has entered a definitive agreement to acquire broadband access device manufacturer Sonoma Systems Inc. for as much as $540 million in Nortel stock. Marina del Rey, Calif.-based Sonoma produces access devices that are installed at customer premises, allowing service providers to deliver integrated services, including Internet access, video services and Internet telephony, to business customers. Brampton, Ontario-based Nortel said in a statement that it hopes the acquisition will let its clients offer managed broadband services on a common platform stretching from the optical Internet to the edge of the network.

## Intel to Purchase Telecom Supplier

Intel Corp. has entered into an agreement to acquire privately held Ziatech Corp. for $240 million. San Luis Obispo, Calif.-based Ziatech designs and sells Intel-based circuit boards, hardware platforms and development systems aimed at telecommunications equipment makers. Ziatech will be a wholly owned subsidiary of Intel, and its 200 employees will become part of Intel's communications products group. Ziatech's customers include LM Ericsson Telephone Co., Copper Mountain Networks Inc., Lucent Technologies Inc., Marconi Corp., Redback Networks Inc. and Nortel.

# Inprise Rebounds After Corel Deal Dies

*Firm now free to pursue market sweet spot*

BY LEE COPELAND

THREE MONTHS after squashing a proposed merger with Corel Corp., struggling tools vendor Inprise Corp. has restructured and is aggressively pursuing a cross-platform development strategy for its development tools and application servers, officials said.

The Scotts Valley, Calif.-based company plans to continue developing Linux server software and tools and expand its initiatives for Java, Windows, Solaris and Mac OS X, said Ted Shelton, senior vice president of business development at Inprise.

Inprise, formerly Borland International Inc., has also brought a new executive management team onboard, which includes Shelton and former Compuware Corp. executive Doug Barre as chief operating officer. The firm is also developing new products.

### Approach Unproven

Analysts said the three-pronged approach has teeth but is contingent on strong execution, such as marketing the Inprise Linux server and expanding the JBuilder tool to new platforms such as Mac OS X.

Bill Claybrook, an analyst at Aberdeen Group Inc. in Boston, said the negated Corel deal distracted Inprise, keeping it from marketing its Linux tools and application server. "There is no standard set of Linux tools, so the opportunity is there," he said. "They have the money and reputation, but the focus was never there before."

"They're not laying idle," said Eric Klein, an analyst at The Yankee Group in Boston. "They are very much involved in product development and [gearing] up to find a sweet spot in the market. Big names like Oracle and IBM will dominate the space, but there is room for another option."

Klein added that new partnerships could rejuvenate the sluggish company.

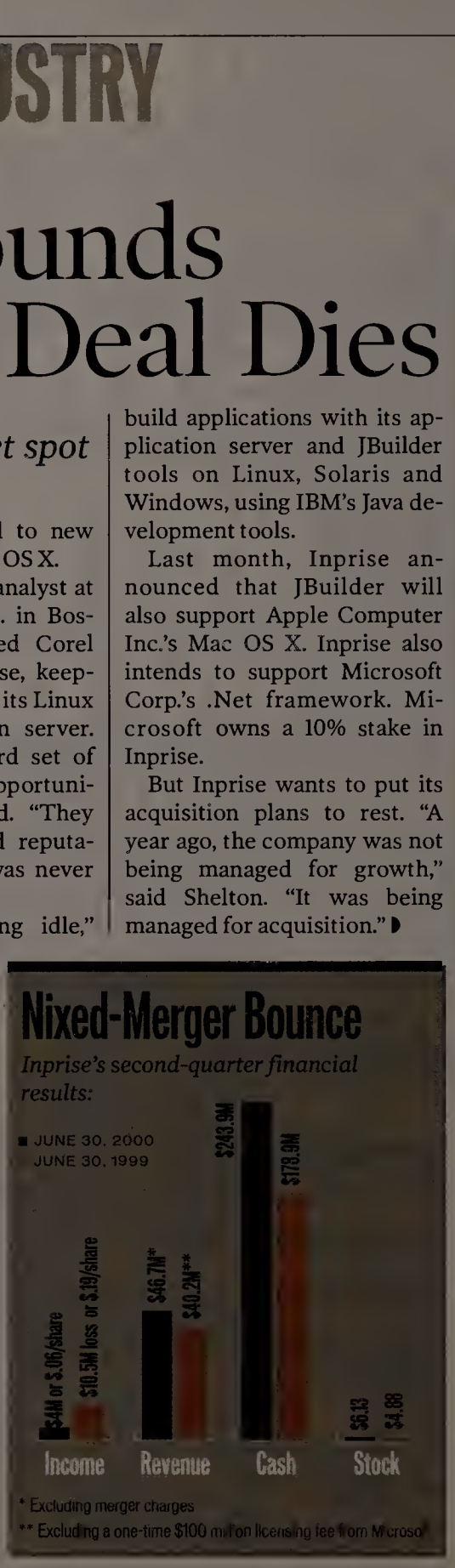
For example, last week, Inprise licensed a tool kit to allow developers to build applications with its application server and JBuilder tools on Linux, Solaris and Windows, using IBM's Java development tools.

Last month, Inprise announced that JBuilder will also support Apple Computer Inc.'s Mac OS X. Inprise also intends to support Microsoft Corp.'s .Net framework. Microsoft owns a 10% stake in Inprise.

But Inprise wants to put its acquisition plans to rest. "A year ago, the company was not being managed for growth," said Shelton. "It was being managed for acquisition." ◗

### Nixed-Merger Bounce

*Inprise's second-quarter financial results:*




## Corel's CEO Resigns

Michael Cowpland's reign at Corel ended last week when he resigned as its president, CEO and chairman to pursue start-up opportunities, according to the company.

Derek Burney, Corel's chief technology officer, was appointed interim president and CEO. Cowpland, who founded Corel in 1985, will continue to serve as its director and technology advisor but won't be involved in Corel's operations.

MICHAEL COWPLAND

Mike Gotta, an analyst at Meta Group Inc. in Stamford, Conn., said Cowpland's resignation was expected.

"It was arguably overdue, but unfortunately, [Cowpland's resignation] won't change" Corel's long downward slide, Gotta said.

Corel didn't return phone calls seeking comment by deadline.

Cowpland's resignation caps a tumultuous period for the Ottawa-based software company. Layoffs, financial losses, a threatened cash shortage and the demise of its proposed merger with development tool maker Inprise have pounded Corel in recent months. Top executives left Corel once the proposed merger with Inprise failed in May.

*– Kathleen Ohlson*

# Novell Sales Still Weak

BY DOMINIQUE DECKMYN

Novell Inc. executives blamed disappointing sales of packaged software for quarterly results released last week that met analysts' expectations but saw a 17% drop in revenue from the same period last year.

In a conference call, Eric Schmidt, Novell's president and CEO, said the company met its total revenue and profit goals for the quarter but was disappointed by packaged software sales, especially in Europe. Schmidt said the company's ZENworks (Zero Effort Networking) for desktops is selling well, but other products in the ZENworks family of network and systems management products haven't lived up to expectations.

"They met the earnings expectations, but revenue is a little low," said Bob Lam, an analyst at Bear Stearns & Co. Inc. in New York. "Things seem to be stabilizing a little compared to the last quarter, but I still don't have 100% confidence."

### Q3 Novell Earnings

| | 7/31/00 | 7/31/99 |
|---|---|---|
| Net sales | $270.0M | $326.8M |
| Net income | $8.6M | $49.0M |
| Income per share | $0.03 | $0.14 |

Sales of the company's core NetWare server software were down 29% from the same quarter last year to $120 million. During the third quarter ended July 31, Novell divided itself into four business units, reorganized its sales operation and refocused on solutions-oriented sales. The changes followed a sharp drop in revenue for the second quarter.

Al Gillen, an analyst at International Data Corp. in Framingham, Mass., said Novell's transition to being a supplier of "Net services" — directory-enabled services that live on the Internet — will cause "additional pain" in quarters to come.

The Net services message is also confusing customers about the future of NetWare, said Gillen. Though NetWare is unlikely to show any future growth, Novell needs to stabilize sales, Gillen said.

In an attempt to confirm its commitment to the platform, Novell has started talking about a two-year road map for NetWare. The firm said it sees the current NetWare 5 increasingly focusing on single-purpose servers while it coexists with two upcoming releases: a high-end NetWare version for mission-critical deployments, and a redesigned, 64-bit NetWare for IA-64 processors. ◗

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MARYFRAN JOHNSON

# Oxymoron-ville

HIGH-TECH UNIONS. Sounds like an oxymoron, doesn't it? The very notion of unionizing IT professionals seems wildly out of whack for an industry in love with the New Economy and overrun with legions of ambitious, bright, highly paid, skilled job-hoppers.

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But events like the ongoing Verizon strike and last year's widely covered flap about the rights of Microsoft's temporary workers conspire to keep unionization efforts bubbling on a political back burner.

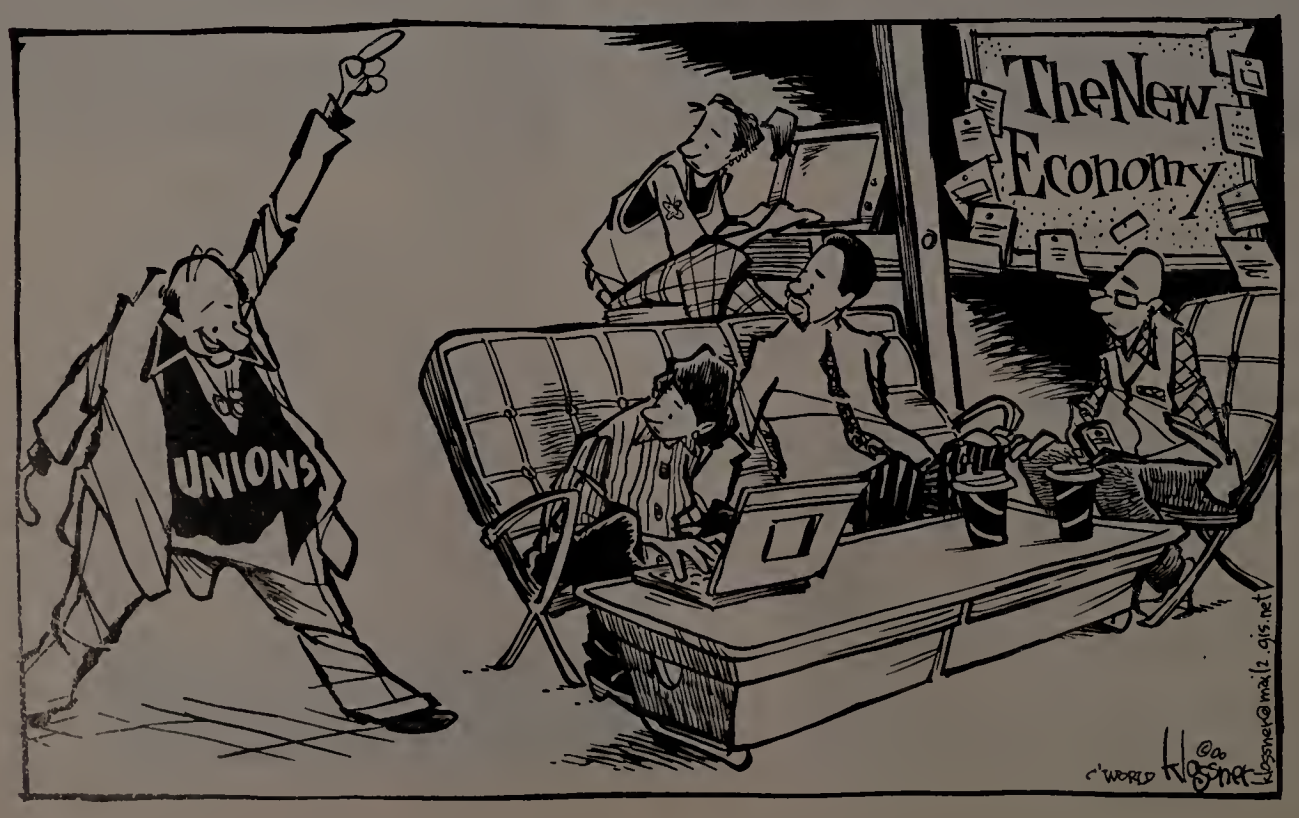
On our front page last week, we ran a story about the impact of the strike ["Unions Take Aim at High-Tech Workers"], which set off a lively and ongoing debate in one of our forums at Computerworld.com. The thought of unionizing IT professionals has most forum participants sputtering with indignation. "Don't tell me that unions are going to survive and move into my industry!" wrote one independent programmer. "Where do union leaders get off thinking they're needed?" another asked.

Good question. Like many baby boomers (and many of our readers), I have an automatic aversion to unions. For me, the *u* word conjures up a faintly menacing, overly controlling, paternalistic relic. When unions strike, the media portray overwrought people waving signs and shaking fists. It's hard to imagine a group of Web developers or network administrators in matching T-shirts, holding placards. All they need is a fresh résumé and two weeks' notice.

But a lone voice in our forum piped up with a reasonable counterargument, noting that not all IT pros enjoy long-term employment at companies offering health insurance, 401(k)s and protection against unfair termination. To say there's no place for unions in the New Economy is, I suspect, a knee-jerk oversimplification. A few weeks ago, the National Writers Union struck a deal with a new Web site (Contentville.com) that was violating copyright protections. Would some irate freelance writers have gotten an effective settlement so quickly? I doubt it.

Granted, the 1950s-style business model of traditional unions is irrelevant, even absurd, to high-tech white-collar workers. But what if unions refashioned themselves as skilled craft guilds offering a new safety net to temp workers and freelancers, as the Silicon Valley branch of the AFL-CIO is trying to do? What if the have-nots of the New Economy could get portable health benefits at reasonable rates, or take classes to gain new skills in exchange for those union dues?

That might be just the ticket out of Oxymoron-ville for high-tech unions.




DON TAPSCOTT

# G8 sees power of IT in bridging gap with poor

COUNTRIES throughout Africa are ravaged by AIDS, and more than half the continent doesn't even have clean drinking water. Then along come the leaders from the recent G8 summit in Japan, who say the answer to such sickness and poverty is to dispatch boatloads of laptop computers.

How out of touch can they be?

At least that was the attitude of some advocacy organizations when told that the G8 leaders had said information and communications technology could help alleviate poverty. To underscore their contempt at the notion and to cater to the cameras, antipoverty advocates burned a laptop on a beach near the summit venue. Snorted a group leader: "If they are hungry, the poorest people in the world can't eat laptops. An Internet connection won't help them survive malaria or TB."

**DON TAPSCOTT** is chairman of Digital 4Sight (*www.digital4sight.com*) and co-author of the newly released *Digital Capital* (Harvard Business School Press). Contact him at **dtapscott@digital4sight.com.**

Thankfully, in their discussion of the growing chasm between wealthy and poor nations, the G8 leaders lifted their sights above simple stopgap measures and asked what could be done to help address the root causes of global disparities. The sensible answer, of course, is to help build the basic infrastructures in these poorer regions so the people living there can begin to generate their own necessities of life.

That means schools, hospitals, farms and roads. All of these can benefit from increasingly powerful information and communication technologies. The upshot is remote health care workers being able to tap into big-city medical expertise, or kids learning the three R's through distance-learning programs. And when these communities build goods to sell, the Net can open new markets.

A tremendous example of such good work is the American Assistance for Cambodia project (*www.cambodiaschools.com*). The group is building schools with solar-powered Internet connections to bring distance learning to remote Cambodian villages.

Well-targeted, modest investments have enormous impact. The dollar figures aren't large; powerful new wireless technologies could bring vast regions online at a small fraction of the cost of the North American infrastructure.

The "Okinawa Charter on Global Information Society" issued by the G8 leaders is a realistic assessment of benefits flowing from IT. The leaders noted that the essence of Internet-driven "economic and social transformation is its power to help individuals and societies to use knowledge and ideas."

The digital infrastructure isn't a magic bullet. As we have seen in many schools, for example, you can't simply throw computers at the wall and see what sticks. Users must be taught how to make effective use of the technology. And relevant content must be available to meet their needs.

But as IT experts, we know firsthand that IT isn't an either/or proposition: Either computers or food. Either computers or schools. Either computers or hospitals. The spurious nature of these juxtapositions should be exposed. Information technology is the means, not the end. ◗

ALLAN E. ALTER

# It's becoming a big dog's world on the Web

DESPITE THE PORSCHES and publicity, we all knew it would be harder to stay rich than to get rich in electronic business. Now that the summer of dot-com discontent is drawing to an end, will things get easier for small electronic businesses?

That's not how I see it. Recruiting new talent remains difficult. Venture capitalists are still playing hard-to-get. And the dot-com strategy theorists I know are indicating that the "incumbents" have big advantages that "new entrants" don't. It looks like the big dogs will drive the small dogs off the porch.

**ALLAN E. ALTER** is editor in chief of the *MIT Sloan Management Review* and a former *Computerworld* editor. Contact him at **alter@mit.edu.**

Take business-to-business hubs — those online market makers where buyers and sellers find each other and do deals via the Web. This business model has attracted many start-ups, but it's the existing big buyers and their major suppliers who will come to own and run these hubs, according to Anil K. Gupta, a University of Maryland business professor (currently visiting at Stanford University). Low barriers to entry will make it hard for start-ups to stave off other rivals, and low — and still falling — profit margins will stunt these new players. The advantage will go to hubs with the market power to drive business their way, and that's what hubs backed by large buyers and suppliers have. Trust is an issue, granted, but if the hubs are run as independent companies, partly owned by technology suppliers that have a vested interest in keeping the site an honest broker, that bullet can probably be dodged.

Laws and regulations have become competitive weapons. All over the world, big companies are using legal means to beat back rivals, says Sirkka L. Jarvenpaa, a professor at the University of Texas. In Malaysia, an Internet start-up was shut down when an established competitor tipped off officials that the start-up lacked a necessary business license. In the U.S., Amazon.com — one of the few large dot-coms — used patent law to get an injunction against Barnesandnoble.com. True, laws and regulations haven't kept up with the evolution of the Internet, and small dot-coms can take advantage of the law, too. However, existing companies have many advantages: experience (and personal ties) with regulators and lobbyists, legal savvy and deep pockets to pay lawyers.

Think of the struggles of dot-com retailers. The fact is, there are few ways for new entrants to find sustainable profitability. As MIT's John M. deFigueiredo has written in MIT's *Sloan Management Review*, the online market for products like office supplies, books and CDs behaves like commodity markets, where economic forces will always cut margins to the bone. With products like home furnishings and clothing, the advantages of strong brands are very difficult to overcome.

The best bets are markets where purchasing is frequent enough and products are variable enough in quality that brand names matter little and a dot-com has an opportunity to build a reputation for service and reliability. But there aren't many markets like that (fresh produce and perhaps mutual funds are two exceptions), and most dot-com retailers are in other markets.

How can a dot-com survive? Partner with other companies serving your market. Take advantage of patent and trademark law. Focus on repeat purchase markets, not one-time purchase markets. Appoint a "chief competitive officer," as Palm Inc. has done, who will study the competition and anticipate their next move. Above all: Don't just think fast; think smart. In the dot-com world, the only small dog that can take on a big dog is a watchdog. ◗

# READERS' LETTERS

## SP1 of little service

WITH THE gleeful anticipation of a kid with a new toy at Christmas, I installed the Windows 2000 Service Pack 1 the other night ["User Needs Go Beyond Service Pack Release," Page One, Aug. 7]. Although I haven't had that many problems with Windows 2000, I said, "What the heck, I might as well bite the bullet and just get it over with!"

I well remember some of the service pack fiascoes from my NT 4.0 days, but, I said, "this will be different!" Well, it was. Equipped with a cable modem connection on my AMD Athlon 700-based system, SP1 took over 20 minutes to download and install vs. six to seven minutes for NT 4.0 service packs.

Once I got SP1 installed, I chanted toward Redmond, rebooted, crossed my fingers and held my breath. The system rebooted and finally came up. But I had completely lost my Internet connectivity. I shut down and rebooted, just to make sure I didn't do something wrong. It still wouldn't connect to the Internet. I found the uninstall and uninstalled SP1, only this time instead of chanting toward Redmond, I contemplated using expletives.

I was alive and well again after removing SP1. Microsoft did get one thing right. At least SP1 for Windows 2000 uninstalled clean.

**Wayno Guerrini**
San Diego
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## Not quite accurate

AMERICAN Airlines' headquarters, and that of its parent, AMR Corp., is in Fort Worth, Texas. They are not Dallas-based, as your article reports ["Airline Industry Alarmed by Wireless Wideband Tests," News, July 31]. Also, American flights into Dallas-Fort Worth International Airport don't land in Dallas. I know, because I work in a building that abuts the headquarters, in Fort Worth, at the south end of the big airport. Folks from Fort Worth are used to the media crediting Dallas when Fort Worth is meant, so you're not alone.

**Kevin A. Wasner**
Network engineer
Sabre Inc.
Fort Worth, Texas

JEFF ROSS OF Time Domain Corp. and reporter Bob Brewin should check their math. With each wireless device putting out 50 milliwatts of power, 2,500 such devices would have a total power output of 125 watts. That would be a whopping-big signal in the navigation band if all the devices were connected together as the analogy suggests.

**John Carobine**
Network analyst
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## Fixing domain woes

DAN GILLMOR raises an important issue in his July 31 column ["ICANN's Pace Slows Progress on the Internet," News Opinion]. Trademark holders are in the right. They should be protected from others using registered trademarks as domain names when doing so is misleading.

The top-level country domain names (.uk, .de, etc.) can already resolve trademark conflicts among countries. Top-level domain names by industry could resolve many other conflicts. Domain names for Microsoft Excel (excel.sw) and Hyundai Excel (excel.car) would not mislead. But creating more generic top-level domain names is an invitation to continued conflict.

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JOHN GANTZ

# How an IT group found a new niche

I OCCASIONALLY speak to gatherings of CIOs about the challenges they face in implementing e-business applications. The last two times, I have been in the same session with Karen Nocket, the chief architect for IS at Toyota Motor Sales, the U.S. division of the Japanese automaker.

I like the new application she discussed at the two events, for it illustrates much of what I have been telling IT types all along. The application, which goes live next month, establishes a common framework of security and authentication (single sign-on) that can be used as a platform for multiple e-business applications developed by the business units. It's implemented on Novell's NDS E-Directory, running mostly on Solaris.

**JOHN GANTZ** is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at **jgantz@idc.com**.

These are five characteristics of this initiative that echo my exhortations. To be successful in e-business, you must:

■ **Embrace e-business.** Nocket and her boss, the CIO, saw how business units were developing applications at a furious pace. Rather than try to control or stem that frantic development, they sought to make it easier and at the same time bring coherency to it.

■ **Take risks.** The risk here wasn't the technology — NDS is tried and true — but the fact that Toyota wasn't a Novell shop. If anything, it's a Microsoft shop, but so heterogeneous that many vendor logos are on the equipment and software that's installed. The IT department made the technology choice, sold it to management and the business units based on the value to the organization and set about making it work. There was a lot of personal credibility on the line.

■ **Get help.** Toyota's IT department could have done the implementation and integration work, but not in the timetable needed. Instead, it called in an outside integrator and was able to design and build the application in about six months. This left IT management free to sell the application's value inside the organization and out.

■ **Sell hard.** Getting support for the application was a matter of selling the business benefits, not the technology benefits (and the toughest group to win over was the other IT professionals at Toyota). The main selling points were speedier application deployment (competitiveness), lower costs and leverage of past investments in enterprise applications (bottom line) and a platform for the future (wealth creation). This selling was a year-long campaign of small-group and one-on-one meetings, constant presentation of the application's value proposition and continuous communication. The internal PR is still going on.

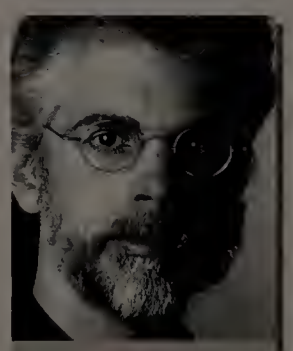
■ **Tackle the right stuff.** The Toyota application provides a common element to old and new enterprise applications, yet allows the business units flexibility to implement applications they want. The IT group picked up the tab for the initiative, offering a compelling business proposition for adoption of the framework ("Let *us* handle the security for your application"). It's cheaper for the business units but accomplishes an enterprise-wide goal that was, until now, largely unarticulated. The fact that it concentrates on implementing system security means it focuses on one of the most critical areas of each new application.

There will be bumps along the road. But the company's concentration on solving one key, common enterprise problem and building internal support in all directions gives the initiative a good prognosis. ◗

WILLIAM M. ULRICH

# Net strategy must include discipline

SINCE THE EARLY 1970s, IT has created and deployed numerous methods, processes and standards. The ongoing refinement of these information management disciplines has gradually shifted IT from an art to a science. As a result, IT has matured as an industry. But Internet deployment efforts, focusing on rapid implementation at any cost, threaten to undo this progress. Therefore, IT must incorporate information management disciplines into Internet initiatives or risk creating an unmanageable legacy of Web-based applications for generations to come.



**WILLIAM M. ULRICH** is a management consultant and president of Tactical Strategy Group Inc. Contact him at **tsginc@cruzio.com** or through *www.systemtransformation.com*

IT has come a long way in a short time. Less than 50 years old, it's a young industry. By contrast, the architectural engineering industry has been around thousands of years. Architects and engineers create structural specifications and coordinate the process of building physical infrastructures with construction teams. Based on this, buildings should remain standing once finished.

The IT industry, on the other hand, didn't enlist architects to define requirements and design specifications until the 1970s. Until then, programmers received requests and wrote code, creating complex technical infrastructures with no architectural blueprints. Systems evolved through piecemeal requests, with little regard to an overall plan. Today's legacy systems, in many cases redundant, fragmented and fragile, are a monument to this period in IT's history.

Once IT reached a point where architectural design was an accepted discipline, methodologies exploded onto the scene to guide developers through the software development cycle. Early methodologies were cumbersome and too granular. In some cases, this resulted in "analysis paralysis," and in others, methodologies were ignored.

IT is now leaning toward "light" methodologies, which offer structural guidelines that allow practitioners to fill in the details.

Over the years, IT has put disciplines in place to address design, development, testing, production, maintenance and other elements essential to the stability of an information environment. Yet Internet development environments, particularly where work is done outside the realm of IT, pay little heed to these disciplines.

Internet developers may argue that the technology is too new, the requirements too dynamic and the pressures too great to bother with formal disciplines. But unstable business and technological conditions don't eliminate the need for discipline. Rather, they heighten it. Internet disciplines include defining business and technical requirements, assessing design impacts, creating back-end system and data-integration standards, determining capacity levels, segregating test systems from production and coordinating development and maintenance cycles.

Internet project disciplines also extend to strategic requirements. IT has learned to avoid creating technical solutions that haven't been synchronized with the overall business strategy, and this also applies to Internet initiatives. Consider a marketing unit that established an e-commerce site to sell products over the Internet, while another business unit joined an industry consortium to sell products through an electronic marketplace. The marketing unit's site may violate participation in the consortium and may be a waste of time and resources.

This scenario highlights the importance of managing all IT activities under a set of disciplines that address the big picture *and* the details. Regardless of whether Internet initiatives are launched internally, stem from a dot-com acquisition or are part of an industry consortium, they should still fall under the IT umbrella.

Organizations should craft strategies where IT disciplines can be deployed across all internal and external Internet initiatives. External initiatives include consortiums and outsourced projects and require oversight to ensure that they use appropriate methods and standards. Yet this oversight could spark a political backlash from Internet developers who feel their creativity is being stifled. IT must address this to ensure the quality and integrity of these efforts.

Regardless, IT disciplines are very important. Organizations ignoring the need to disseminate these disciplines to business units and external partners risk creating redundant, fragmented Internet systems that will be difficult to maintain over the long term. And this could curtail Internet deployment efforts for years to come. ◗

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# BUSINESS



## ONLINE HAGGLING

There are laws that prevent auto manufacturers from selling directly to consumers, but many manufacturers let customers shop for cars on the Web and then connect with dealers to close the sale. Now, Ford has taken online car shopping a step further by negotiating final prices that participating dealers have agreed to honor. ▸ 34

## BOO COMES BACK

Boo.com, the trendy European fashion retailer that folded in the spring, will soon be back, says Ben Narasin, CEO of Fashionmall.com, which bought the domain name after Boo.com's demise. In an interview with *Computerworld*'s Carol Sliwa, Narasin offers details about Fashionmall.com's plans for Boo. ▸ 35

## SPACE CAMP TECHIES

The U.S. Space and Rocket Center, home to Space Camp and NASA's Marshall Space Flight Center, isn't as high-tech as you might expect. Find out from Larry Levaas, who went from the accounting department to information technology, what it's like for him and his staff of three to work at the Alabama space center. ▸ 36

## NEW RULES FOR E-BIZ PROJECTS

The pace of e-business has gone from rapid to frantic, and the risk of disaster has grown, writes Ed Yourdon. To be successful in this environment, project managers have some new lessons to learn, he warns. ▸ 36

## MILITARY INTELLIGENCE

Information can mean the difference between life and death when it comes to a foreign attack. That's why the U.S. military puts a high priority on knowledge management. It also offers several lessons for the private sector. ▸ 38

## FRESHMAN RITES OF PASSAGE

Lie low, watch and learn is one executive's advice for chief information and chief technology officers in their first year. Another suggests just the opposite: "It's the only chance to make an impression on senior management," he says. Find out from technology executives just what it takes to survive your freshman year. ▸ 46

## WOOING WEB SHOPPERS

Customer acquisition costs have become more complex than ever in the age of e-commerce. How do you define a "customer" on the Web? Is it someone who spends money, or is it someone who browses advertisements? As the New Economy grows, businesses are finding that these are questions they can't ignore. ▸ 48

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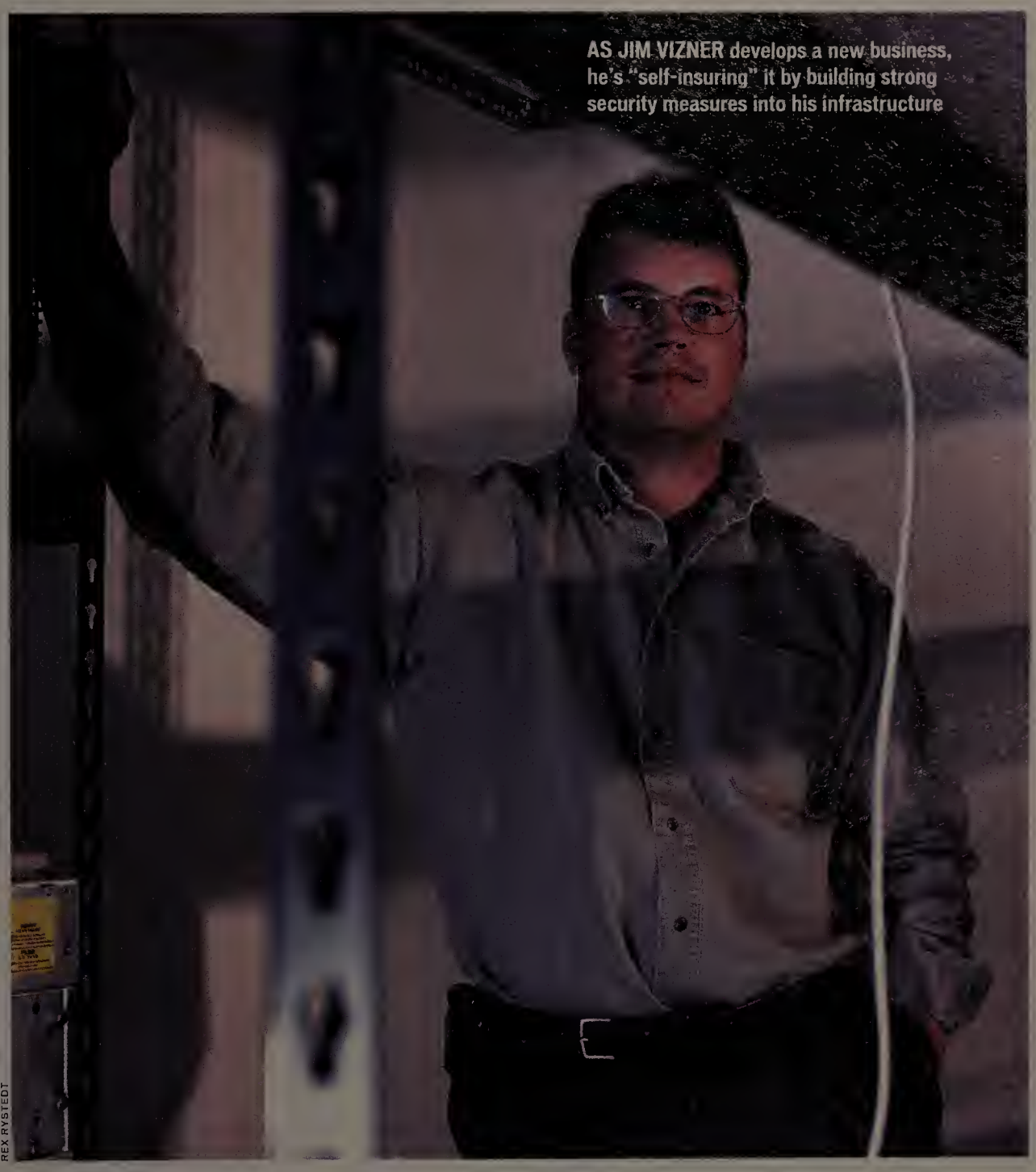

AS JIM VIZNER develops a new business, he's "self-insuring" it by building strong security measures into his infrastructure

REX RYSTEDT

# THE VALUE OF CYBERINSURANCE

**JIM VIZNER SUFFERED** through the impact an internal hacker had on his company in 1998: the demise of the business, and of his wife's business as well. He could have protected his company with cyberliability insurance, but there was one problem — it wasn't available two years ago. Although cyberinsurance is available now, it's expensive. But more insurers are waking up to technology's impact on business liability.

44

# Ford Tests Ways to Offer Users Real Prices Online

*Pilot tests link it with dealers to avoid legal limits on direct sales to consumers*

BY LEE COPELAND

PROSPECTIVE vehicle buyers at *www.ford.com* will find all the gee-whiz features that the $162.5 billion automaker can buy. But one critical component of the car-buying experience — and perhaps the most important — is still missing: the ability to get a final purchase price.

Local franchise laws in the U.S. and Canada prevent automakers from selling vehicles directly, but two new pilot projects from an e-commerce group jointly developed by Ford Motor Co. and Austin, Texas-based Trilogy Software Inc. offer more accurate pricing data and allow consumers to configure vehicles online.

In both online programs, consumers still buy vehicles from dealers, not the manufacturer. But the programs have ushered in new levels of cooperation between the automaker and its dealers, whose relationship has long been marred by conflict, said Robert DeSisto, an analyst at Gartner Group Inc. in Stamford, Conn.

The Ford/Trilogy project "is novel from the standpoint that Ford is providing their channel, in this case the dealer, with technology that [dealers] could not normally afford to improve upon customer relationships," said DeSisto.

If Ford successfully expands the test projects, it will give many customers the ability to buy cars online based on individually negotiated contracts with the dealers, which will streamline the whole order process, DeSisto said.

The first pilot project, Ford Fleet Online (*www.fleet.ford.com*), allows business customers who buy fleets of vehicles to configure and buy them at prices they have already negotiated with dealers. Last week, Dearborn, Mich.-based Ford expanded the program from eight dealers and fleet customers to about 50 of each.

The next phase will enhance the ordering process, such as giving both dealers and customers an opportunity to review and receive an electronic invoice, letting customers leave special instructions with their orders and storing invoices for later viewing. The Windows NT-based online ordering system connects to Ford's back-end vehicle scheduling system, allowing customers to place orders directly with the automaker. It also allows dealers to set up pricing formulas for individual fleet customers, who are prompted with the negotiated price as they configure their vehicles online.

Ford customer Michael D. Sims, vehicle fleet operations manager at the Church of Jesus Christ of Latter-day Saints in Salt Lake City, said the system gives accurate prenegotiated pricing and saves time.

"Rather than go to [an] outside source to spec out a vehicle, we can now do that in one place online," said Sims. "Another advantage is that I'm placing the order as I spec out the vehicle. I don't have to worry about it falling into a black hole, because it's integrated with Ford's system."

**CAR DEALERS** may be helped by Ford's latest effort to provide the technology for dealers to offer service to online customers

On the consumer side, Ford Canada's BuyerConnection pilot program in Ottawa (*www2.buyerconnectioncanada.ford.com*) allows consumers to configure vehicles online and buy from one of the two-dozen local dealers that are participating in the program.

As with existing auto manufacturer sites, consumers can see the manufacturer's suggested retail price (MSRP) for the vehicles. But they can also get a special "e-price" that's based on Ford's negotiations with the 24 dealers who participate in the program, according to Jeff Morton, e-consumer manager at Ford Motor Company of Canada Ltd.

"The e-price is the Internet transaction price," said Morton. "It's a fair price [designed] to save the customer the hassle of going through a long negotiation, because a lot of customers don't like to do that."

For example, the MSRP on a base model Ford Taurus is listed as $27,276 (Canadian), while the e-price is given as $26,039. Consumers are then provided with the contact information for local dealers participating in the e-price program.

More than 200 consumers per week have configured vehicles online, but online sales have been minimal, Morton said. The pilot program includes only 24 of the 565 dealers in Canada and offers pricing on just three vehicle lines, but it may expand. It has connected many prospective customers to dealers, however, which might facilitate real-world sales, he said.

Volkswagen of America Inc. launched a pilot program in May that allowed customers to configure specialty Beetles and negotiate pricing with dealers online using electronic message boards. However, that program offered MSRP pricing as opposed to purchase prices.

Tom Cornellier, Internet retail strategy manager at Ford, said these pilot projects are helping to train dealers to interact with a new breed of Internet-savvy and informed consumers. "It's very frictionless on the Web ... so it's a matter of getting dealers comfortable with these consumers," he said.

# Electronic Component Exchanges Compete to Bring Orders From Chaos

*Parts market ready for streamlining*

BY PIMM FOX

It's a mess out there.

Engineers in the electronic-components industry must sift through mounds of catalogs trying to find the specific parts they need. By one count, a single database for the industry can contain 12 million entries.

Out of this jumble come attempts to unify all the players in the form of online business-to-business exchanges, such as New York-based PartMiner Inc. and ChipCenter, San Jose-based SpinCircuit and Bloomington, Minn.-based Central Resources Inc.

These companies are staking their claims in the estimated $437 billion market for electronic parts that Cambridge, Mass.-based Forrester Research Inc. predicts will be in place by 2004.

Kathy Drake, president of Harrington Signal Inc. in Moline, Ill., said her company not only uses PartMiner's Electronic Commerce Free Trade Zone marketplace to buy parts, but also pays an extra fee for PartMiner to search for older, obsolete parts not readily available. Harrington Signal assembles electronic components for alarm systems and escalator and elevator units.

"We have a customer who is making assemblies using older parts, and they have told us they are not redesigning their circuit boards," she said. "That means we have to find these parts."

## No Phone Required

Rather than dialing around looking for various quotes and suppliers, Harrington Signal, with 95 employees, now uses PartMiner to locate the parts it needs, and "we are also able to find multiple resources," said Drake.

"We know where to go for specific parts by pointing and clicking rather than making lots of time-consuming phone calls or going through the Yellow Pages," she added. "This saves money on our end."

To a $16 million company like Harrington Signal, which serves companies such as elevator and escalator maker Kone Corp., even small savings can mean a lot to the bottom line.

Forrester analyst Navi Radjou said he's confident that exchange services such as PartMiner's will be successful.

"In the future, the sellers will help the buyer not only with purchase decisions, but with all aspects of design and manufacture. ... The competition is going to be between the large exchanges — such as e2Open, where IBM is the dominant player — and the niche players, such as PartMiner," said Radjou. "Success will depend on what kind of expertise and help these sites can bring to the customer."

# Oracle Lends Business Muscle to E-Travel Web Services

*Internet-based releases add travel management, business integration tools*

BY MICHAEL MEEHAN

Leveraging the technical muscle of corporate parent Oracle Corp., e-Travel Inc. recently released a slate of Web-enabled services that add travel management capabilities to purchasing, human resources and other back-office functions of Oracle applications.

Oracle bought e-Travel in March of last year.

This spring, the Waltham, Mass.-based business-to-business travel supplier started making direct network connections to airlines, hotels and car rental agencies and with corporate buyers.

Over the past few weeks, e-Travel has added travel management and business integration tools into its product set, borrowing heavily from Oracle's e-commerce and customer relationship management technologies.

While e-Travel doesn't have the market share of competitors such as Sabre Inc. or GetThere Inc., its latest services are taking business-to-business travel technology "to a new level," said Kate Rice, an analyst at Sherman, Conn.-based online travel research firm PhoCusWright Inc.

## No Extra Software Required

For instance, she noted that unlike Sabre, whose services require corporate customers to install third-party software, e-Travel's latest features don't require any software other than a Web browser and Internet access, she said.

Henry Harteveldt, an analyst at Forrester Research Inc. in Cambridge, Mass., said the latest releases help put e-Travel "on a much more shoulder-to-shoulder level" with Sabre and GetThere, now that it has ticketing and workflow capabilities.

Emeryville, Calif.-based Extensity Inc. and IBM also provide technology to online travel planners to help corporate customers manage in-house business rules and trip approval.

E-Travel also used Oracle Workflow to build a corporate travel workflow system for e-Travel customers as well as Oracle's Discoverer ad hoc query and analysis tool to build a reporting system that allows travel managers to check supplier performance (such as an airline's on-time flight performance) and other travel activities, according to Rob Wald, e-Travel's director of product marketing.

E-Travel also announced the creation of an Internet ticketing and customer support network. Previously, e-Travel corporate clients either booked their travel through a supplier's direct links or built an itinerary, after which they needed to make reservations through a travel agency.

## Ready-Made Itineraries

Wald said travel agencies have often been lukewarm to the idea of supporting customers who come to them with ready-made itineraries. "Those aren't high-margin customers for them," he said.

Customers can now book through e-Travel for $16.95 — far less than the standard $32 to $70 agency fee, Wald said. Like other online travel companies, the ticket fulfillment includes a package of paging, Web phone and e-mail support services. ◗

### Oracle Enters the Travel Fray

*It took a while, but Oracle has finally begun to build travel applications connected to its core systems for its business-to-business travel subsidiary, e-Travel.*

**MARCH 1999** Oracle buys e-Travel.

**JULY 1999** Amtrak and Hertz become the first companies to provide direct links to e-Travel corporate customers.

**MAY 2000** Delta Air Lines Inc. joins the direct-link program.

**JULY 2000** E-Travel introduces Oracle-based ticketing, workflow management and purchasing integration systems.

# Boo.com to Rise Again, Run by Fashionmall

*But big changes are in store, says CEO*

Fashionmall.com is getting ready to reopen Boo.com's virtual doors this fall.

But the new Boo.com will operate differently than the original London-based fashion retailer did before its investors pulled the plug on Boo.com Group Ltd. in May.

Fashionmall.com Inc. in New York, which bought the Boo.com domain name and other assets in the spring, said that instead of carrying its own inventory, the new Web site will function as a portal that links online shoppers directly to products sold on the Internet by manufacturers and retailers.

**"YOU'VE GOT TO be willing to be wrong," says Ben Narasin, Fashionmall.com CEO**

In an interview with *Computerworld* reporter Carol Sliwa, **Ben Narasin**, 34, the president and CEO of Fashionmall.com, discussed the company's future plans for Boo.com.

**Q: Bright Station PLC acquired Boo.com's technology. What did you buy?**

**A:** We bought everything else. It was great for us because we wanted Boo, but we didn't want Boo to be a retailer anymore.

And we didn't want to be saddled with [its technology] infrastructure. I mean, we just had zero interest in that. As a nonretailer, as a portal, we get no value. So we bought all the trademarks, all the URLs, all the content.

In our business model, the back end is fulfilled by our clients, not by us. We're all about thin. We want you to very quickly get what you want. Our job is not to send you products. Our job is to introduce you to the person [who] has the product [and] can send it to you.

**Q: Are you trying to build a fashion mall with the Boo name?**

**A:** That was the initial thought, but I think that Boo goes a lot further than that. I think it means a lot more.

See, Fashionmall puts walls on its growth because of the words "fashion" and "mall." Boo doesn't do that. ... [Boo.com] is our tool to go global.

**Q: Will you provide links to the Web sites of companies that offer products through Boo.com?**

**A:** That's a core question. Our business has always been predicated on linking to sites. [But] the Boo model will be about linking to products.

You may have [an online] store that carries a lot of things, of which 2% are relevant to [our] audience. It is not our mission to send the Boo consumer into the store so they can get lost in the other 98%.

**Q: If customers order five different products from five different manufacturers or retailers, will they get five different boxes in the mail?**

**A:** Yes. The average order is two products. So, generally speaking, we know that's a concern. Statistically, it doesn't happen that often. It's not the general way that people shop.

[But] going forward, at some point in the future, would it make sense not just to aggregate demand and vendors but to have a centralized distribution structure? Perhaps.

**Q: What was the biggest mistake Boo.com made?**

**A:** The biggest lesson I've ever learned — and I think it's the same thing they also suffered from — is you've got to be willing to be wrong, and you've got to be willing to be wrong really quickly.

We used to have a universal shopping basket of our own ... and we redesigned it. It took about six or seven months ... [and] it encompassed everything we ever dreamed of.

We rolled it out, and the day we rolled it out, sales dropped by 50%. We left it up for one week to make sure it wasn't an anomaly, and then we threw it away and took our lessons from it. But the thing here is, we didn't get married to this product because we'd invested in it.

That's a mistake that a lot of people make. ◗

## SNAPSHOT

### The Competitive Edge

*CEOs give high ranks to IT for contributing to competitive advantage. Building customer relationship systems, improving supply-chain management and exploiting new technology are important contributions to competitive advantage, according to a survey of 400 CEOs from the world's largest corporations.*

**TOP IT CONTRIBUTIONS TO COMPETITIVE ADVANTAGE:**

| | |
|---|---|
| ▸Building customer relationship systems: | 38% |
| ▸Rapid exploitation of new technology: | 33% |
| ▸Improving supply-chain management: | 33% |
| ▸Improving production and operational efficiency: | 29% |
| ▸Improved sharing and use of knowledge: | 25% |

Base: Numbers reflect the percentages of total respondents who ranked each issue among the top three in importance.

SOURCE: THE WORLD IT STRATEGY COMPASS CENSUS 2000, LONDON SCHOOL OF ECONOMICS

## WORKSTYLES

# What It's Like to Work at . . . U.S. Space and Rocket Center

**Interviewee:** Larry Levaas, information systems manager
**Company:** U.S. Space and Rocket Center, home to Space Camp, the Aviation Challenge program, NASA's Marshall Space Flight Center and other space and aeronautics history exhibits. The center is operated as an agency of the Alabama state government.
**Location:** Huntsville, Ala.
**Number of IT employees:** Four people support all administrative systems. A separate eight-person information technology staff supports the workstations and simulation software used for Space Camp and the Aviation Challenge.
**Number of employees (end users):** About 300 in Huntsville. The Huntsville IT staff also supports remote sites in Titusville, Fla. (the U.S. Astronaut Hall of Fame), Merced, Calif., and Mountain View, Calif., where there are other Space Camp and Aviation Challenge locations.
**Mission-critical systems:** An AS/400-based reservations system and call center, a Windows NT-based network for ticketing and food service point-of-sale systems plus a membership system and a Novell Inc. NetWare-based network for accounting, payroll and merchandise point-of-sale systems.
**Upcoming IT projects:** Upgrading the current online camp registration form to a real-time, online reservations system.
**It seems your environment is somewhat more low-tech than one might expect.** "My department has only existed since April 1997. For four years before that, it was just me – I started here in 1991 as an accountant, and when they decided to upgrade that system from an IBM System/36, they put me in charge." He had implemented an accounting system network while in the Army.
**Compensation and bonuses:** "Because we're a state agency, we're not allowed to give bonuses per se, but when the system is working right, we get annual performance-appraisal pay raises. It's difficult to be competitive on salary. I lost two people this year who left for higher-paying positions. I tried to get them more money . . . but management's position was that we can't barter."
**IT training:** "It has been my policy to get people out for training once a year."
**Dress code:** "We don't require coats and ties, but we don't wear jeans either. Camp counselors wear NASA jumpsuits, and the Space Camp IT staff wears Space and Rocket Center T-shirt and shorts."
**Workday:** 8 a.m. to 5 p.m.
**Come on. Really?** "I come in early because I'm an early bird. And we're all four on call. . . . We don't normally work weekends, but the exhibits are open all year except for Thanksgiving and Christmas, and every so often, something happens with the [point-of-sale] systems that requires attention. I expect we'll put in some extra hours with the online reservation system."
**Security badge/card needed to get into building or office?** Yes. "Since we have all these kids here that we're babysitting [the Space Campers], we have an emphasis on security."
**Decor:** "I'm a Snoopy fan, so I have some Snoopy sayings on the wall. My favorite [is], 'I gave up trying to understand people long ago. Now let them try to understand me.' "
**Favorite exhibit:** "The lunar landing exhibit, because whenever I see that, I always remember where I was in '69 when I saw the first moon landing. I was in the Army, stationed in Germany, and we were watching it on TV, and at first, the image was being projected upside down. I've always been a sci-fi fan – I love *Star Trek* – so this is all interesting stuff here, like the real Apollo space capsules."
**Free refreshments:** None. "But I keep a jar of candy in the IT area, labeled 'Computer Virus.' "
**Office mascot:** "Rodents. We once found that a squirrel had gotten into the ceiling and chewed through some of our network fiber, causing some of our [cash] registers to fall off the network."
**Would employees feel comfortable e-mailing the CEO?** "I wouldn't say so."

*– Leslie Goff (lgoff@ix.netcom.com)*

ED YOURDON

# Success in e-projects

A COLLEAGUE TEACHES an excellent short course entitled Managing IT Development Projects. It has been losing popularity lately, so he renamed it Managing e-Business Projects. Voilà! The course is now oversubscribed. Another colleague had the same experience when he changed the name of his short course from Requirements Management to Requirements Management in Internet Time.

What's going on here? Are e-business/Internet projects *really* that different?

E-business projects face the same demands, pressures and risks as any other kind of IT development project, but to a greater degree. When client/server technology was introduced in the early 1990s, we embraced rapid application development (RAD) to cut project schedules from years to months. Today, project managers have embraced frantic application development (FAD) in an attempt to cut project schedules from months to weeks.

When RAD was first introduced, developers sometimes used it as an excuse to abandon all discipline and resort to extemporaneous hacking. Obviously, the temptation is even greater in an e-business FAD environment.

Similarly, RAD was a response to the increased volatility in the business environment during the '90s, while FAD is the e-business response to an almost chaotic environment in today's Internet era.

These two factors alone are enough to make life difficult for a project manager.

It's a difficult struggle to maintain some form of "light" methodology that will impose discipline on the most critical project activities, without wasting any precious time on bureaucratic processes associated with old mainframe-era projects. And it's difficult to negotiate the trade-offs between schedule, functionality, resources and quality when *all* these project parameters are extremely demanding.

*Project managers have embraced FAD.*

But perhaps the greatest difference between e-business projects and more traditional IT development projects is that an e-business system has the potential to cause a fundamental change in an organization's business strategy, which almost always requires an accompanying change in business processes. One could argue that the same thing occurred a decade ago when client/server was introduced, and two decades ago when PCs first appeared. But the e-business phenomenon seems much more fundamental, because it creates a much more immediate and intimate connection with customers, vendors and suppliers. It has also allowed us to separate a physical *product* (like a CD) from the *information* associated with that product (such as the music recorded on that CD), and distribute them separately. That, in a nutshell, is what the Napster controversy is all about.

What does this have to do with project management? Everything! It's very difficult to develop an appropriate e-business computer system if senior management hasn't formulated a new e-business strategy or if it has been articulated in such fuzzy terms that no one understands it. And it's very difficult to deliver a successful e-business computer system if the associated business processes haven't been re-engineered. IT managers typically don't have the political clout to make dramatic changes in the business processes of an end-user department. We learned that much when IT managers embarked upon business process re-engineering projects during the client/server era.

So what should e-business project managers be learning on the job and in short courses such as those my colleagues are presenting?

They need to learn about effective light methodologies that strike a balance between rigor and speed. There are several such methodologies available today.

They also need to learn about triage, so that resources are focused on the e-business system's most critical functionality and features, while the bells and whistles are de-emphasized or ignored. And they need to learn how to negotiate under pressure with customers and end users to achieve a realistic balance of schedule and functionality. Negotiation skills are in short supply among IT project managers, but successful negotiations — followed by successful delivery — will help IT managers achieve the political clout they so desperately need.

But most of all, e-business project managers need senior executive involvement in their projects, for without a clearly articulated e-business strategy and an enthusiastically supported re-engineering of business processes, the e-business computer project has little chance of success. ◗

*Yourdon is editor of* Cutter IT Journal, *published by Cutter Consortium in Arlington, Mass. Contact him at* www.yourdon.com.

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# The Navy – and the rest of the nation's military – push the envelope on knowledge management, offering lessons for the private sector. By Gary H. Anthes

*The predawn silence at the U.S. Embassy in Indonesia is shattered by automatic weapons fire, and a small force of U.S. Marines barely prevents the attackers from entering the compound. Within the next few hours, the embassy sends information about the attack to the Combat Development Command in Quantico, Va. There, a team analyzes the data and sees that it matches a pattern of activity by a fundamentalist rebel group operating in the region.*

*Another team at Quantico taps into a Community of Practice knowledge database to review new tactical maneuvers being developed in a modeling game room. Experts from across the U.S. Marine Corps join an online discussion, aided by the latest intelligence information and satellite photographs merged into an electronic work space. Within a few hours, a new urban tactic is developed, tested in the modeling game room and sent to the Marine commander in Indonesia.*

*The commander coordinates plans with the* USS Winston Churchill, *a guided-missile destroyer some 500 kilometers to the east. Later that day, he calls for fire, and 90 seconds later, the ship launches a dual salvo of Tomahawk missiles at a key rebel communications center 10 kilometers from the embassy.*

IT'S JUST A "STORY," says Alex Bennet, the U.S. Navy's deputy CIO for enterprise integration. But such stories are an important ingredient in what observers describe as the largest knowledge management effort in the world, she says.

The military's knowledge management programs are so comprehensive, in fact, that the private sector can learn much from them, from more effective ways to apply information technology to new ways of teaching (see related story, next page).

## POST COLD WAR PRESSURES

"Knowledge superiority for the Navy is key to what we do in war fighting," Bennet says. "We've known that for hundreds of years, but what's different today — because of the . . . Internet — is that there is access to so much more information, by everyone. So we can't do things the same way today."

The U.S. military is reshaping knowledge management and pushing it far beyond its technological roots in data warehousing, data mining and groupware. Indeed, becoming a "knowledge-centric" organization has become a top priority for the armed forces, as high turnover, rapid rotation and personnel cuts work to erode the military's stores of knowledge.

"The Navy has gone full-speed ahead in adapting knowledge practices and processes. There is no com-

Charting Cou

[ Knowledge Management ]

# The Military's Lessons for Private Industry

Outside observers praise the U.S. military's knowledge management programs not only for their use of IT but also for their attention to the often-overlooked cultural and psychological factors that govern learning. The private sector could learn a few things, observers say.

For example, General Motors Corp. in Detroit has about the same number of employees as the U.S. Navy, and it also has a number of knowledge management programs under way, says Larry Prusak, executive director of IBM's Institute for Knowledge Management. "But they are not as effective as the Navy," he says. "People say, 'GM is too big,' but the Navy does it."

The difference, he says, is that GM can't match the wide and deep organizational commitment to knowledge management that exists in the Navy, particularly at senior levels.

Prusak praises the Navy's emphasis on contextual thinking and case histories.

"Context is not words, and it's not numbers. It's the surrounding meaning of things," he says. "One of the failings of expert systems is they don't capture context, just rules." The military used to teach strategy with schematic diagrams – arrows, circles and boxes – but has largely moved to case studies and stories because they convey context far better, he says.

"The Defense Department is basically a learning institution; hardly anybody ever fires a gun," says Paul Strassmann, a *Computerworld* columnist and adjunct professor of information warfare at the National Defense University in Washington. "People spend more time learning than in any civilian organization."

And the way the military learns best, Strassmann says, isn't through classroom instruction but from exercises, or war games. "This is where the Defense Department is so superior – the corporate sector doesn't do war games," he says.

But it could and should, Strassmann asserts. He says he once set up and refereed a war game at a Fortune 500 company. Middle management, which was trying to defend its budget request and operating plan, represented the company as the Blue Team, while senior management played the role of the company's key competitor as the Red Team.

Through the game, management came to understand the competitor as never before, and it changed its operating plan accordingly. "That's how you learn," Strassmann says. "You have to walk in the shoes of your competitor."

Such corporate war gaming is rare, Strassmann says, but he notes that the practice has just been adopted by Fairfield, Conn.-based General Electric Co.

"The private sector tends to look at knowledge management from an IT perspective," says Lt. Cmdr. Judith Godwin, knowledge manager for the Navy's Pacific Fleet. "But if you look at it from just an IT perspective, it's just information." Only when information is put to use to benefit the organization does it become knowledge, she says.

But getting the organization to see it that way isn't easy, she acknowledges. "Changing the mind-set is the biggest difficulty we have," she says, explaining that commitment has to exist at the very top levels of the organizations.

And reward systems help, Godwin says. "We redid the award program here. People are now more rewarded on their team efforts than on individual efforts."

*– Gary H. Anthes*

pany in the world anywhere near it in scope," says Larry Prusak, executive director of IBM's Institute for Knowledge Management in Cambridge, Mass. "And it's a very balanced endeavor. They are talking about people, technology and social relationships that make things work."

The U.S. Pacific Fleet's home port is Honolulu, but it has a "home portal" as well, called the Knowledge Home Port. It's an intranet portal linking more than 250 databases, but it isn't intended primarily for information retrieval.

"You don't go there to search; you go there to collaborate," says Lt. Cmdr. Judith Godwin, Pacific Fleet knowledge manager. The Navy launched Knowledge Home Port in stages over the past two years. The portal has yielded initial labor savings of 18,000 staff hours per month, according to the Navy.

The Pacific Fleet's intranet home page previously had a stovepipe orientation, offering links to the major Navy organizational units such as personnel and IT. But it was recently redesigned around cross-functional, topical "channels."

Now, the personnel department posts information to the personnel channel, but IT might post personnel-related data there as well, Godwin says. This structure encourages interdisciplinary collaboration, she says, because users see across the Pacific Fleet, not into a single stovepipe.

The knowledge portal also provides for threaded discussions. These recorded exchanges are a good way for new personnel to learn about a topic and its history, Godwin says. And instant messaging is now augmenting radio communications — which can be garbled and are subject to interception — among ships at sea.

"Chat-room communication is clear, it's in writing, it's real-time, you can set permissions for people to read it and you can capture it and put it in a log book," Godwin says. "That one tool is everything knowledge management is all about — it provides the place to create the knowledge, use it and transfer it, all in one simple [commercial] tool."

*Continued on page 42*

**"KNOWLEDGE SUPERIORITY for the Navy is key to what we do in war," says Alex Bennet, the Navy's deputy CIO for enterprise integration**

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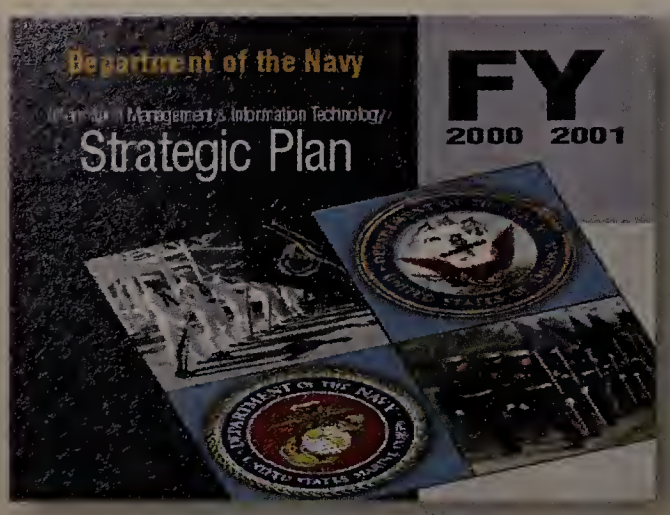


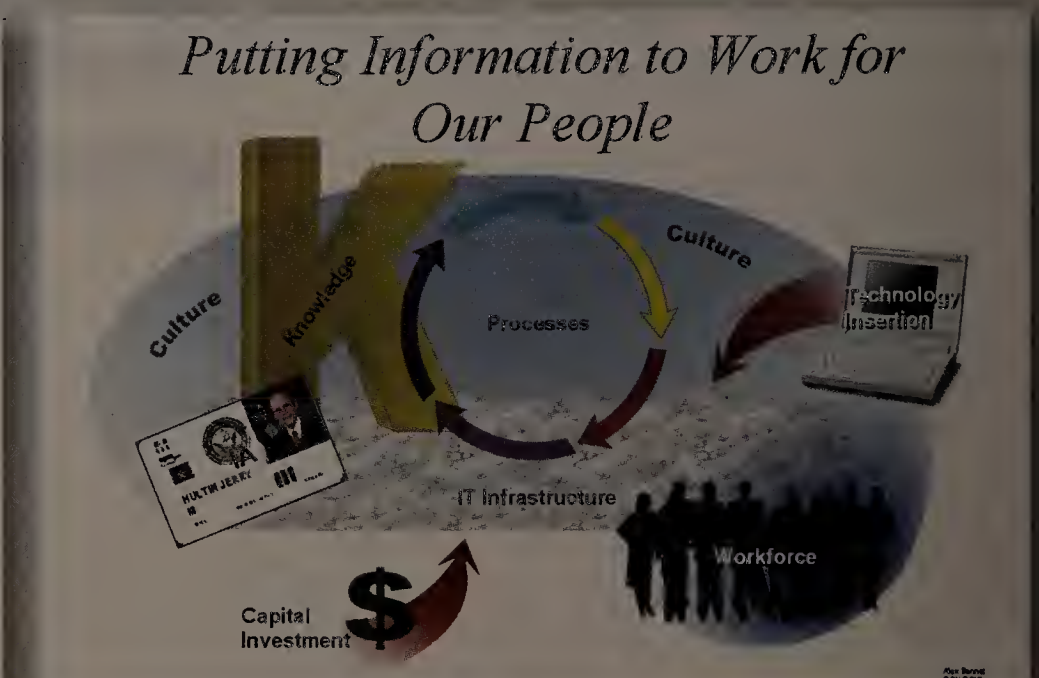

# Navigating a Sea of Knowledge

One of the crown jewels of the U.S. Navy's huge knowledge management program is a CD-ROM intended to help organizations become "knowledge-centric."

"It's a tool kit to help you change your organization," says Alex Bennet, the Navy's deputy CIO for enterprise integration. "It has everything you need to start focusing on and identifying knowledge centers, to understand where expertise resides in the organization and to build systems to support the sharing of that expertise."

The CD is organized into seven operational areas. They correspond to phases of a knowledge management initiative, including building awareness, preparing the organization and "brokering knowledge." Each area includes objectives, a discussion of key concepts and a checklist of tasks and exercises.

The 3MB disk (from which the images pictured here were taken) also contains a rich set of appendices: profiles of knowledge management software from 50 companies, a bibliography listing hundreds of books, a library of best practices from companies such as Ford Motor Co. and Chevron Corp., countless links to other Web sites, articles and case studies and some 25 tools such as a balanced scorecard and interviewing guidelines. – *Gary H. Anthes*




# Charting a Course

[ Knowledge Management ]

*Continued from page 39*

Such tools are necessary, but they aren't the only ingredients in a successful knowledge management recipe, Bennet says. Indeed, the Navy is putting much emphasis on nontechnical considerations such as adding "context" to decision-making, she says.

For example, one naval unit has begun creating video clips in which decision-makers explain how and why they made an important decision. They tell not just of the immediate needs that drove a decision, but of the more remote and indirect drivers as well, such as political or economic factors.

## BE AWARE OF THE CONTEXT

The idea is that decision-makers should be more aware of context, and systems should capture and report contextual factors. "Our support systems are building in context fields, so if you, for example, do something to a document, you now record the reason right with it," Bennet says. "This adds a foundation we have been missing in the past."

Adding context is part of the military's larger move to promote "systems thinking" -- a broader and more careful way of making decisions. The Navy, with the help of Arthur D. Little Inc. in Cambridge, Mass., is developing an internal Web site and a CD-ROM devoted to training in systems thinking (see story, above).

Peter Stroh, a principal at Arthur D. Little, explains: "It's about understanding — and more effectively managing — the interdependencies between parts of the organization. Usually, those interdependencies are not obvious." For example, Stroh says, a company under budget pressure might lay off people and get cost savings in the short term. But in the long run, revenue may fall further than costs because the layoffs hurt morale and productivity, outcomes that weren't considered when the layoffs were made, he says.

## IN THE TRENCHES

The U.S. Army is also promoting systems thinking — "seeing things in their entirety and not just sequentially," says Joseph Williams, vice president for knowledge services at Plano, Texas-based Electronic Data Systems Corp.'s federal unit. That's increasingly important in a world where troops and their commanders must be prepared for nonconventional warfare such as terrorist attacks.

"It allows you to react, rather than freezing in your tracks," Williams says. "And it gives you a sense of how you fit into the entire picture, so you understand the consequences of your reaction."

The Army has the equivalent of the Navy's Knowledge Home Port in its Army Knowledge Online, a desktop collaborative "work space" that combines e-mail, online chat, workflow and document management and threaded discussion groups.

The portal can also link to the After Action Reporting System and the Center for Army Lessons Learned, where a commander can see not only how a unit fought in the past but also why other commanders made the decisions they made. There are 65,000 users of Army Knowledge Online today, with 1 million users projected by 2005, Williams says.

Army Knowledge Online will become mission-critical, literally, says program manager Maj. Charles Wells. "Yesterday, we had a very straightforward threat: We knew who the enemy was, and we had a lot of detailed plans to stop an attack," says Wells. "Today, we are faced with a variety of challenges — regional instabilities, economic dangers and the proliferation of weapons of mass destruction. How are we going to accomplish all these missions with a much smaller force? The senior Army leadership sees knowledge management as the key."

As advice to other knowledge managers, Godwin says, "Don't build something and expect people to come. They won't." Instead, she says, "find communities that are trying to get a task done. Enable them with a specific tool so they can see the value it can bring to what they are doing right now. Then it will grow from there."

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# GOT CYBER INSURANCE?

## Few companies seem to know that they can insure themselves against Web shenanigans. Part of the problem is that insurers themselves are just waking up to technology's impact on business liability. By Deborah Radcliff

THANKS TO A CRIPPLING SERIES of computer attacks in 1998, Seattle-based Viznet Inc., an online merchant exchange network service provider once valued at $1 million, is now selling off its customer lists for $50,000. The worst damage occurred when the attacker spammed Viznet's 90 merchant customers, claiming Viznet was a cover for a pedophile ring. The attacker, a former programmer at the company, knew that the wife of owner/operator Jim Vizner owned a day care center.

Vizner calculates that direct losses — denials of service, replacing data that was chewed off the hard drives, customer attrition and public relations costs — amounted to $340,000. As those losses piled up, he called his insurance company. That ended up costing him the most dearly — 18 months of his life spent away from the languishing Viznet while he battled with the insurance company and visited insurance regulatory agents and attorneys. No payout on benefits ever materialized. And now, all his calls to the insurer are referred to an attorney.

"My business is gone. My wife's business is gone. Now, I just hope we can hold on to our house," says a disheartened Vizner.

Vizner could have protected his company with cyberliability insurance. The problem is, such insurance wasn't even around when the attacks started. Even if it had been, it would have been expensive. The average entry point for such policies is around $20,000 per year, with high deductibles.

### Traditional Policy Exclusions

Insurance companies can't very well apply brick-and-mortar costing and actuaries that were framed in the 1960s to digitized assets. They're still answering some tough questions: How do you determine the value of the data at risk? How do you conduct "cyber" inspections? And how do you determine acceptable risk levels, let alone evaluate losses?

"Insurance companies, like all industries, are just now coming to grips with the real impact of technology among their clients," says Jim Bond, a technology attorney at law firm Gowling, Strathy & Henderson (*www.gowlings.com*) in Ottawa. What Bond means, in layman's terms, is that traditional business-liability policies won't even touch cyberdamages because, as the risk model stands now, the insurance companies will lose their shirts.

To fill this gap, a handful of specialty insurers have emerged in the past 18 months. The biggest players in this space include Insuretrust.com LLC in Atlanta (*www.insuretrust.com*), Hamilton, Bermuda-based Ace Ltd.'s information technology products group (*www.acelimited.com*) and Okemos, Mich.-based J. S. Wurzler Underwriting Managers Inc.'s Website Insurance & Security Program (*www.jswum.com*).

But these specialty offerings are expensive. And Vizner says he, like millions of other small business owners, simply can't afford the premiums.

That leaves people like Vizner, who's now developing an online credit-card and shopping-cart services business, with only one other option: self-insurance. That means managing risk by building strong security into the infrastructure itself — a task Vizner has hired some top security talent to handle. And it also means establishing a slush fund to cover repair costs should an attacker wreak such havoc again.

"We're going to outline our new organization to provide our own first line of defense. After all, it's the smaller companies who use some of the best software to minimize these attacks," says Vizner.

That's not to say Viznet's systems were insecure to begin with. No reasonable amount of security would have protected the firm, because it was attacked by an insider with intimate knowledge of the systems. Christopher Bisciglia, who was 18 at the time of the attacks, pleaded guilty in a Washington court in June to unauthorized access and computer damage at Viznet. He could go to prison for up to a year and be fined $100,000.

Bisciglia, a former employee whom Vizner says was "brilliant" in developing his company's proprietary applications in a powerful Web content development tool, had built his own back doors and booby traps. Vizner is awaiting Bisciglia's sentencing before deciding whether to file a civil suit against him.

This type of internal threat is why Stephen Furst, president and chief operating officer at Djangos.com, which

> We have a lot more at risk than just a Web site going down.
>
> **STEPHEN FURST, PRESIDENT AND CHIEF OPERATING OFFICER, DJANGOS.COM**

sells CDs and videos over the Internet and at eight retail outlets nationwide, decided to buy security liability insurance. But Furst, who has 25 years of intellectual property to protect in addition to Djangos, says he can't afford not to take out cyberliability insurance.

"In our case, we're a fully integrated click-and-brick. Our entire network — distribution, store offices, point-of-sale terminals and customer kiosks — is integrated with our stores. Everything is browser based," Furst says. "We have a lot more at risk than just a Web site going down."

But Furst, who looked at two insurers before choosing Insuretrust.com, wouldn't have bought any cyberinsurance without an attorney's review of the fine print, he adds.

Similarly, insurers won't take on any cyberliability without assessing risk. That's why these emerging cyberliability insurance carriers first require network security evaluations and, if necessary, some security cleanup work before issuing policies. The good thing about these evaluations is that they may eventually lead to standardized security models and standards of acceptable risk, says David Tapper, an analyst at International Data Corp. in Framingham, Mass.

And such standardization should help both customers and insurers, according to Jonathan D. Gale, deputy underwriter and director at R. F. Bailey Ltd., one of 120 underwriting agencies for Lloyd's of London (Lloyd's backs J. S. Wurzler's policies). "Our rating is based on the comprehensiveness of the engineering and audits. If the engineering firms do their jobs properly, there should be no losses," Gale says.

Already, Furst considers his company's $20,000 security evaluation the most important part of the insurance process. Like Vizner, Furst says the best risk management begins with good physical and logical protection. "The study covered every facet — from hiring practices at our stores [to] corporate and IT [to] database access controls and protocols to the locks on the doors," he says.

## Buddy System

To further reduce their risk, insurers are also buddying up with security services companies, which handle ongoing audits and, in some cases, outsourced security services.

For example, J. S. Wurzler recently announced a partnership with Hewlett-Packard Co.'s Mission Critical Services group through which Interex (the International Association of Hewlett-Packard Computing Professionals) in Sunnyvale, Calif., will sell e-commerce insurance to HP customers.

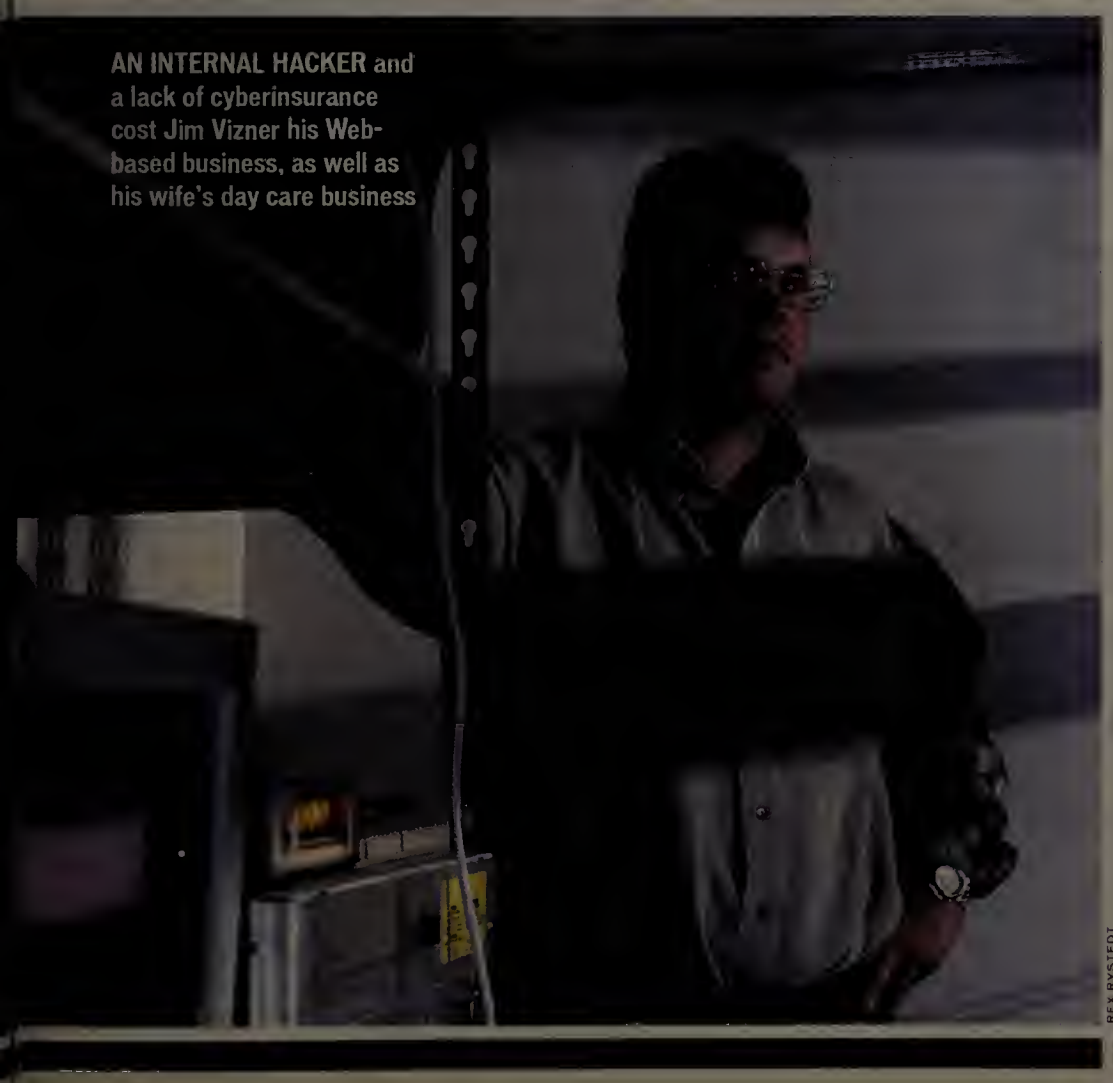
In addition to HP, Internet Security Systems Inc. in Atlanta (*www.iss.net*); IBM Global Services (*www.ibm.com*); Counterpane Internet Security Inc. in San Jose (*www.counterpane.com*); Rockville, Md.-based Axent Technologies Inc. (*www.axent.com*), which recently agreed to be acquired by Symantec Corp.; and Comstar.net Inc., a business-hosting Internet service provider in Atlanta, offer security insurance policies bundled with other services, says Tapper.

Tapper says security liability insurance is taking off fastest in such services companies, but buyers like Furst and Vizner say they would prefer lower-cost, all-inclusive business policies to cover the bricks-and-clicks.

J. S. Wurzler is already looking into establishing a single insurance policy that covers the physical (fire, burglary and others) and the logical (data recovery and online business) aspects of business, says CEO John S. Wurzler.

Ace is also taking a serious look at developing a single business policy program, according to Mark Greisiger, director of business development for Ace's IT products group. "[Cyberliability is] a stand-alone policy right now because it takes a high degree of engineering knowledge to underwrite these things," he says. "In a couple years, the trend will be that IT insurance will become part of our standard coverage, because every one of our business clients has some e-business."

If a uniform level of protection and risk model is met, data protection insurance should become more feasible, says Tapper. Maybe then, small-business owners like Vizner can do more than manage their own risk. Because more than anyone, he knows what can happen when you're unprotected. ◗



**AN INTERNAL HACKER** and a lack of cyberinsurance cost Jim Vizner his Web-based business, as well as his wife's day care business

REX RYSTEDT

## Testing Criteria

*Before issuing cyberliability policies, insurers look for three basic elements, according to Nick Economidis, an independent cyberliability insurance underwriter in Philadelphia:*

1. **Around-the-clock logging and excellent reporting capabilities. "The more footprints that the system tracks, the better," he says.**
2. **Fine-grained authorization, including who's allowed to use what part of the system and who has access to what types of files. This is in addition to authentication and nonrepudiation, he explains.**
3. **User policies and enforcement, and employee compliance.**

## Read the Fine Print

*Because security liability insurance is so new, attorneys and buyers suggest that before you buy a policy, have someone — preferably an insurance or technical attorney — go over it with a fine-tooth comb. Some questions to ask:*

- **Does the policy cover all areas of risk, indirect and direct damages incurred from carelessness and attacks, and viruses from within and without?**
- **Does the insurer require a thorough security assessment? Can you get competitive bids? How does its criteria stand up against those of others?**
- **How often does the insurer perform cybersecurity "inspections"?**
- **Does the insurance policy pass the review of an IT and/or insurance attorney?**

# The Chief's First Year

## The first few months are the key survival period for new CIOs and CTOs, who are often hired to resolve major problems. Relationship building may be the most important thing they do in that time. By Jill Vitiello

WHAT DOES IT take for a chief information officer or a chief technology officer to survive the first year on the job? To find out, we asked a few of them. Here's what they recalled.

"The first year is the most critical for the CIO -- it's the only chance to make an impression on senior management," says Tom Pettibone, a managing partner at Transition Partners, an information technology management consulting firm in Reston, Va. Pettibone is a three-time former CIO at Philip Morris Cos., New York Life Insurance Co. and Richardson-Vicks Co. (now part of Procter & Gamble Co.).

### Quarter 1: Honeymoon or Spin Cycle?

"Generally, new CIOs are brought in because things are in trouble," says Pettibone. "Corrective action is needed, and the new CIO must demonstrate significant progress within the honeymoon window."

In his first months as CIO at New York Life, Pettibone hired a consulting firm to conduct an assessment of projects that were under way. "That allowed me to spend time developing a rapport with the other senior managers — my peers and my customers," he says.

Some CIOs get the chance to scope out the situation in advance. In January last year, Florida Gov. Jeb Bush appointed Roy Cales director of information systems for the executive office of the governor.

"For the first six months, I kept a low profile and just watched and learned," says Cales. By October, Cales had turned his observations into an action plan of recommended changes.

When Bush read the plan, "he decided Florida needed a CIO, and I was the person for the job," says Cales. Bush appointed Cales CIO in November.

The same month that Cales began as CIO in Florida, Don Sunderland, former global head of technology at a Wall Street firm, became CIO at New York-based Edison Schools Inc., the country's leading private manager of public schools. "I had taken head-of-technology jobs before, and I had settled into a pattern," Sunderland recalls. He recommends that a new CIO "listen to the user base for the first couple of months, put together a technology strategy by the end of the third month, pitch it to senior management by the sixth month and go ahead."

At start-up companies, the CIO usually goes by another name — chief technology officer. CTOs at young companies expect hands-on work but point out that their jobs are very similar to those of CIOs.

"The CIO title goes with large orga-

nizations and describes people who manage infrastructure and direct strategic objectives. The CTO at a start-up is the product visionary and dreams up technology. However, both the CIO and the CTO set the vision for technology," says Jeff Ricker, co-founder and CTO of XMLSolutions Corp. in McLean, Va., a provider of XML-based infrastructure software and services that allow companies to integrate information.

"In the first quarter, we went from 12 to 30 people, and I was still needed as a programmer. I was coding right along with the rest of the development team," says Ricker. Although he was "in the very guts of the code, working out issues," Ricker says, he learned that his ultimate goal as CTO was to make himself obsolete. This meant replacing himself as a developer with people who actually did the job better than he.

He's not the only one with that goal.

"Initially, I did all the development work myself," says Mark Griffis, co-founder and CTO of Plano, Texas-based MindFlow Technologies Inc., a company launched in January last year to provide Web-based e-commerce applications for strategic sourcing management. "I had grand plans of what we were going to do. At the end of the second month, I realized there was a lot more work to do before I could implement our solutions. By the end of the third month, I understood the issues and saw how we could build a product that fit into our business plans for a larger-scale company."

## Quarter 2: Transition Time

Despite his natural inclination to "sit up all night and code," Ricker transitioned himself by the second quarter to recruiting and hiring a development team and then gave that team the responsibility for staffing up.

Griffis had a similar experience as he brought on software developers but maintained oversight for the high-level architecture of the product. "During the first six months, I was still knee-deep in development work until we got the initial product up and running," he says. "Only then could I pull back and focus on the business plan, attracting venture capitalists and building a customer base."

"You can't help but respond to the work that needs to be done," says Sunderland. "But the CIO's job is to take the organization beyond where it is."

Ricker says the No. 1 pitfall for the chief to avoid is ego. "Embrace your own obsolescence," he says, "and bring in the best quality people you can possibly find. Build your team with people who are better than you."

In Florida, Bush charged Cales with running the state's technology office as if it were a business. With 40 different state entities, "Florida would be No. 11 on the Fortune 500, and we weren't acting that way" in terms of purchasing equipment and vendor services or setting IT standards, says Cales.

PHIL SEARS/SILVER IMAGE PHOTOGRAPHY

> For the first six months, I kept a low profile and just watched and learned.
>
> ROY CALES, CIO, EXECUTIVE OFFICE OF THE FLORIDA STATE GOVERNOR

Cales engaged Stamford, Conn.-based Gartner Group Inc. to provide research and to validate vendors' monitoring of large-scale projects. He also appointed three deputy CIOs who are responsible for hardware and infrastructure, application development and portals and back-office operations, including SunCom, the state government's telephone network.

## Quarter 3: Perspective and Accomplishments

At Edison Schools, Sunderland was busy with the company's exponential growth, rolling out technology to thousands of students, parents and faculties across the country. "The number of people, the density of the systems and the size of the infrastructures was stunning," he says.

In his third quarter on the job, Cales created a single portal for accessing government services online. In July, *www.MyFlorida.com* debuted, pulling together more than 140 state Web sites into one portal.

The CTOs gained new perspectives, too.

"We went from three people to 30, so I spent time doing work that would fall to a CIO," says Griffis.

He also met with customers to learn how to add value to the company's product and built a network of supportive mentors.

"In the third quarter, I got too detached from the development team," recalls Ricker. "I was constantly on the road meeting with customers and business partners. It got to the point where I couldn't recognize the people on the development team, and they couldn't recognize me, either."

For the first-year CIO or CTO, there are "many tasks that require your attention simultaneously," says Pettibone.

"When you come onboard, senior management wants you to complete projects, straighten out problems, start new initiatives, cut costs, correct daily operational problems, install operations processes and governance, improve user relations, correct staff and training issues, develop an IT strategy that's aligned to the corporate strategy, resolve vendor issues, evaluate outsourcing and develop relationships with the other top executives," he says. "You are really on the firing line.

"Developing [a] rapport with my peers was the most important thing I did early on as CIO because it establishes credibility," adds Pettibone.

## Quarter 4: The Future is Clear

By the fourth quarter, most successful chiefs have begun to make progress on the key issues they identified early in their tenures, and they can look confidently toward the future.

Cales initiated a statewide enterprise resource planning project that will take approximately three years to complete — despite his long workdays. He is "scheduled 12 hours per day" during weekdays and spends another four hours each day in informal meetings with his senior staff members, who "are all workaholics," he says. He and his team clock another 10 to 15 hours on the weekends, too.

"Sometimes I joke that I could go somewhere else, work less and make more," says Cales, a former IT consultant. "But it was the challenge of the job that brought me here — and the chance to give something back."

A strong belief in Edison Schools' mission of helping kids is what motivated Sunderland to accept a job at "significantly less" than what he was earning on Wall Street, he says.

Griffis describes the intensity of a start-up as "fun — like being inside a tornado." He says his workday is "sucked up more and more by meetings now," and he's looking forward to the day when the environment stabilizes.

"During the first year, I told my wife that the hours and the demands would lighten up as we met milestones," Griffis says. "I'm still hoping the environment will stabilize, but I love it. I can't think of anyplace else where I could have had so much opportunity and done so much in one year." ◗

*Vitiello is a freelance writer in East Brunswick, N.J.*

# Customer Acquisition Costs

BY MATT HAMBLEN

For information technology professionals, the concept of customer acquisition costs might sound straightforward. But in the New Economy, it can be as bewildering as entering the twilight zone, thanks to all the nuances of online customers.

For example, what is a customer? On the surface, it appears to be an easy thing to define. But if your company runs a Web site that generates revenue purely by bringing in eyeballs to view banner ads, then a customer might be somebody who registers at the site rather than a casual browser, says Nicole Vanderbilt, an analyst at Jupiter Communications Inc. in New York.

In contrast, online retailers prefer to think of a customer as somebody who actually spends money, Vanderbilt says.

"Companies must define customers on their own terms using criteria that drive their business goals," she said in a recent report.

According to officials at San Jose-based Shop.org, a trade association of online retailers, customer acquisition costs are the amount of money spent on marketing that has been dedicated to customer acquisition, including general brand-awareness efforts such as posting a company logo on every highway billboard from New Jersey to Nebraska.

Shop.org uses The Boston Consulting Group to study online retailing trends. These include customer acquisition costs, the salaries being commanded by marketing personnel and IT improvements and maintenance that improve site navigation, says Julie Breen, an analyst at the Boston-based consulting firm.

DEFINITION

**Customer acquisition costs** are the marketing and advertising expenses needed to turn a prospective customer into an actual customer. This can include money spent to entice a visitor to a Web site or to a brick-and-mortar store to purchase goods or services.

Shop.org doesn't include discounts on products that lure new customers or free delivery when calculating customer acquisition costs, Breen says.

Customer acquisition costs are much higher for pure-play Internet retailers ($82 per customer) than for brick-and-mortar retailers that sell across multiple channels ($31 per customer), according to a survey of 221 retailers conducted by Shop.org (see chart).

## Double-Digital Inflation

Online customer acquisition costs may continue to rise in the short term, Breen says. However, she adds, those costs should eventually drop as online companies become more recognized by buyers.

In general, pure-play Internet retailers will spend 20% to 40% more than retailers with physical stores to acquire customers, according to a recent study by Bain & Co. in Boston.

Online grocers such as Webvan Group Inc. in San Francisco appear to spend the most among electronic retailers to acquire customers, averaging $84 per customer, compared with $53 for online apparel retailers, Bain reports.

TOM HOFFMAN

"Companies must define customers on their own terms using criteria that drive their business goals."

NICOLE VANDERBILT, ANALYST, JUPITER COMMUNICATIONS INC.

Nevertheless, Vanderbilt says she believes that most current methods for deriving customer acquisition costs are flawed. For example, some analysts simply divide the number of dollars spent by a company per quarter on advertising and marketing by the number of customers attained during that period.

However, Vanderbilt says, that method fails to account for previous efforts to acquire customers and is "too short a snapshot" for determining customer acquisition costs. She adds that it's both wrong and naive for a company to count a targeted e-mail campaign as a specific avenue for attracting new customers, because it's possible that general brand-awareness efforts may have also had an impact.

Vanderbilt says companies should attribute at least part of their acquisition costs to customer retention. In addition, companies should include the various methods they use beyond advertising and marketing when calculating the costs of attracting customers, including product discounts and free delivery costs, she says.

Jupiter analysts also note that relying on customer acquisition costs to judge the performance of an online company can be misleading. For instance, when a particular market, such as online pet stores, is flooded with companies, that will typically drive up the costs of acquiring new customers.

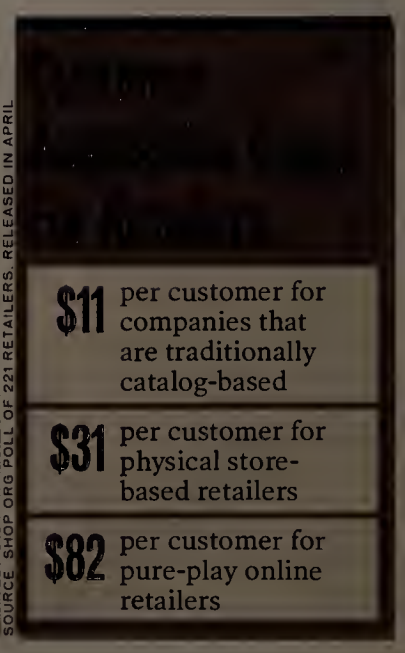
Those costs will vary depending on how difficult it is to land a customer. For example, buying a book over the Web is easier than opening an online stock-trading account, which helps explain why it may cost an online bookseller only $30 to acquire each customer but it may cost an online broker up to $400 to acquire a stock trading customer, Jupiter says.

## The Nasdaq Effect

The downturn in dot-com stocks throughout the first half of this year is likely to have a negative impact on the amount of money online companies spend trying to acquire new customers, says Lynne Harvey, an analyst at the Patricia Seybold Group in Boston.

Harvey says online retailers need to examine the broader question of whether customer acquisition costs are leading to profitable customers — meaning people who spend more on products and services than it costs a company to attain them.

"Many customers purchase once and not again," Harvey says. "Sometimes, [the] IT costs to enhance a Web site and [the] other costs to acquire an individual customer are so high that the value is negative. Some retailers don't even call a customer 'a customer' until he or she has purchased twice in a year."

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JOE AUER/DRIVING THE DEAL

# History can be a negotiating guide

WHEN A CUSTOMER was evaluating vendors for a large data-communications project, one of the competing vendors was the incumbent supplier that had performed poorly and had already lost part of its business with the customer. But because of a powerful response to the customer's request for proposals (RFP) and some improvement in its performance at the eleventh hour, the vendor made it onto the short list.

During its presentation, the vendor's representative prefaced his remarks with the phrase, "Let's forget about the past." He then went to great lengths to acknowledge that performance had been less than stellar in some respects, citing numerous excuses and a few examples where corrective actions were taken. The vendor's plea was that some history should be forgotten.

The customer recognized this as a negotiating ploy designed to excuse unsatisfactory performance. The customer felt poor past performance needed to be addressed, not excused, and insisted that the vendor make a contractual commitment to strong remedies, including financial credits, should less-than-exemplary performance recur.

At this point, the customer also mandated strong service levels to get the vendor to focus on solid, measurable performance rather than on making excuses. The customer was also able to negotiate favorable cancellation rights in the event of poor vendor performance, rather than the usual vendor-offered cancellation due to a material breach of the contract.

So the customer ended up hiring the vendor, but with a new attitude: Poor performance wouldn't be acceptable. This customer's experience should remind us that only strong contractual guarantees with built-in remedies will demonstrate a vendor's real confidence in its ability to perform.

## Eliminating Guesswork

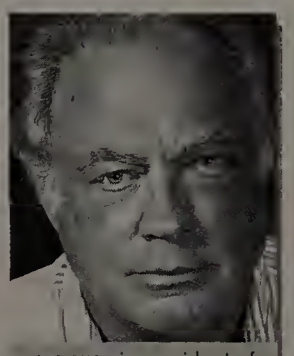
How many times have you issued an RFP and then wondered who was really going to respond? The RFP "intent to respond" form can be a useful tool to assess potential vendors' interest and intent early, while you still have the time and the opportunity to seek alternative vendors or project approaches. The form is a simple one-page document that lists the vendor's name and address, the name of a contact person and contact information. It also includes a place to indicate whether the vendor will respond to your RFP or elect to decline. Potential vendors should return the form within one week.

It's important to give potential vendors enough time to assess the opportunity and decide whether they're truly interested in your business. Since most RFPs allow the potential vendors four to six weeks to prepare a response, it isn't unreasonable to request a one-week response to the intent form. Getting vendors to focus quickly on what must be done is the first step in obtaining meaningful responses.

Your RFP should contain a letter of transmittal that summarizes the project and the overall RFP requirements. The transmittal letter can also be used to highlight the intent to respond form and emphasize the requirement to complete and return it within a specified time. Vendors that don't indicate their interest aren't demonstrating much responsiveness and should be eliminated from further consideration. The intent to respond form gets you good information early.

Establishing vendor interest and commitment early in the procurement process is important. It makes it possible to adjust the potential supplier pool without adding too much time to the overall project schedule. Waiting passively to see which vendors show interest and respond later to the RFP itself isn't an effective way to move the project forward. Simply hoping for the best may put the project team in a reactionary mode, leaving it to scramble to find alternative vendors if the pool dries up late in the evaluation process.

Assessing the interest up front gets you ahead of the curve and keeps your negotiating power intact — both good things. ◗



**JOE AUER** is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at **joea@dobetterdeals.com.**

# CONFERENCES

**■ NETWORLD/INTEROP 2000 (WITH LINUX BUSINESS EXPO ATLANTA 2000)**
*Georgia World Congress Center, Atlanta, Sept. 24-29*
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**CONTACT:** Key3Media Events Inc. in Needham, Mass., (888) 886-4057 or (781) 433-1516
*www.interop.com/atlanta2000*

**■ FRONTLINES 2000: TECHNICAL SUPPORT CONFERENCE**
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Learn about the technical support issues that will face IT staffs in the future.
**COST:** $1,295
**CONTACT:** Influent Technology Group Inc. in Framingham, Mass., (888) 333-9088; fax: (508) 872-2299
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**■ INTERNET AND E-BUSINESS CONFERENCE AND EXPO**
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**CONTACT:** iEB Fall, (888) 248-0036
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**CONTACT:** Linkage Inc. in Lexington, Mass., (781) 862-3157; fax: (781) 862-2355
*www.linkageinc.com/clo2000us*

**■ WEBSOURCING 2000**
*Sheraton Boston Hotel & Towers, Sept. 28-29*
Learn the latest designs in outsourcing technology that can help your business compete in the technologically based business world.
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**CONTACT:** Intermedia Group in Westboro, Mass., (508) 870-5858 Ext. 20; fax: (508) 870-6521; e-mail: imgcorp@intmedgrp.com.
*www.intmedgrp.com/websource*

**■ THE 2000 MANAGING CHANGE CONFERENCE**
*Loews Coronado, San Diego, Oct. 5-6.*
This conference will teach businesses how to transition into the world of electronic business and manage a company in the New Economy.
**COST:** Members of The Conference Board, $1,495; $1,700 for others
**CONTACT:** The Conference Board Inc. in New York, (212) 339-0345
*www.conference-board.org/change-sd.htm*

**■ PLANET2000**
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A strategic business-to-business conference that brings together industry experts to help companies gain advantages in the digital economy.
**COST:** $1,499
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**■ GARTNER GROUP'S SYMPOSIUM/ITXPO 2000**
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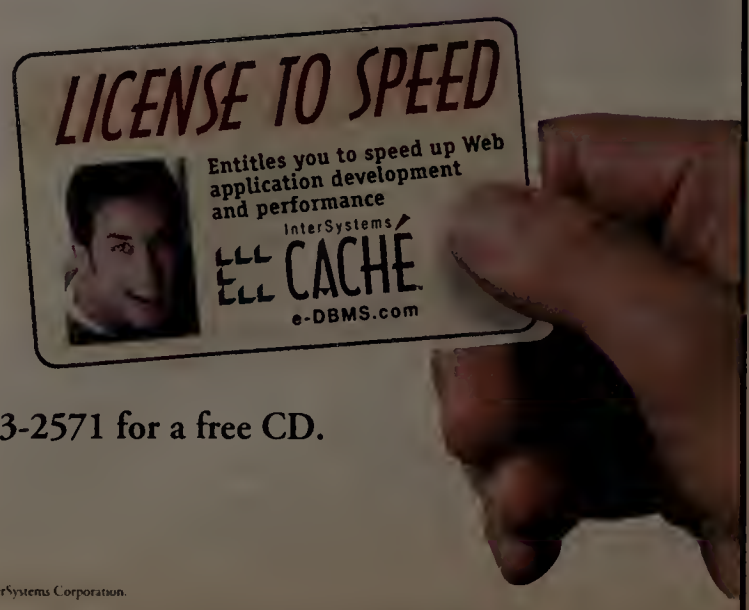


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# TECHNOLOGY



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The Canadian National Research Council's Bioinformatics Group has installed GraphOn Corp.'s Bridges software to connect scientists to Unix databases that have information for and about genetic research. ▸ 52

## A NEW VIEW

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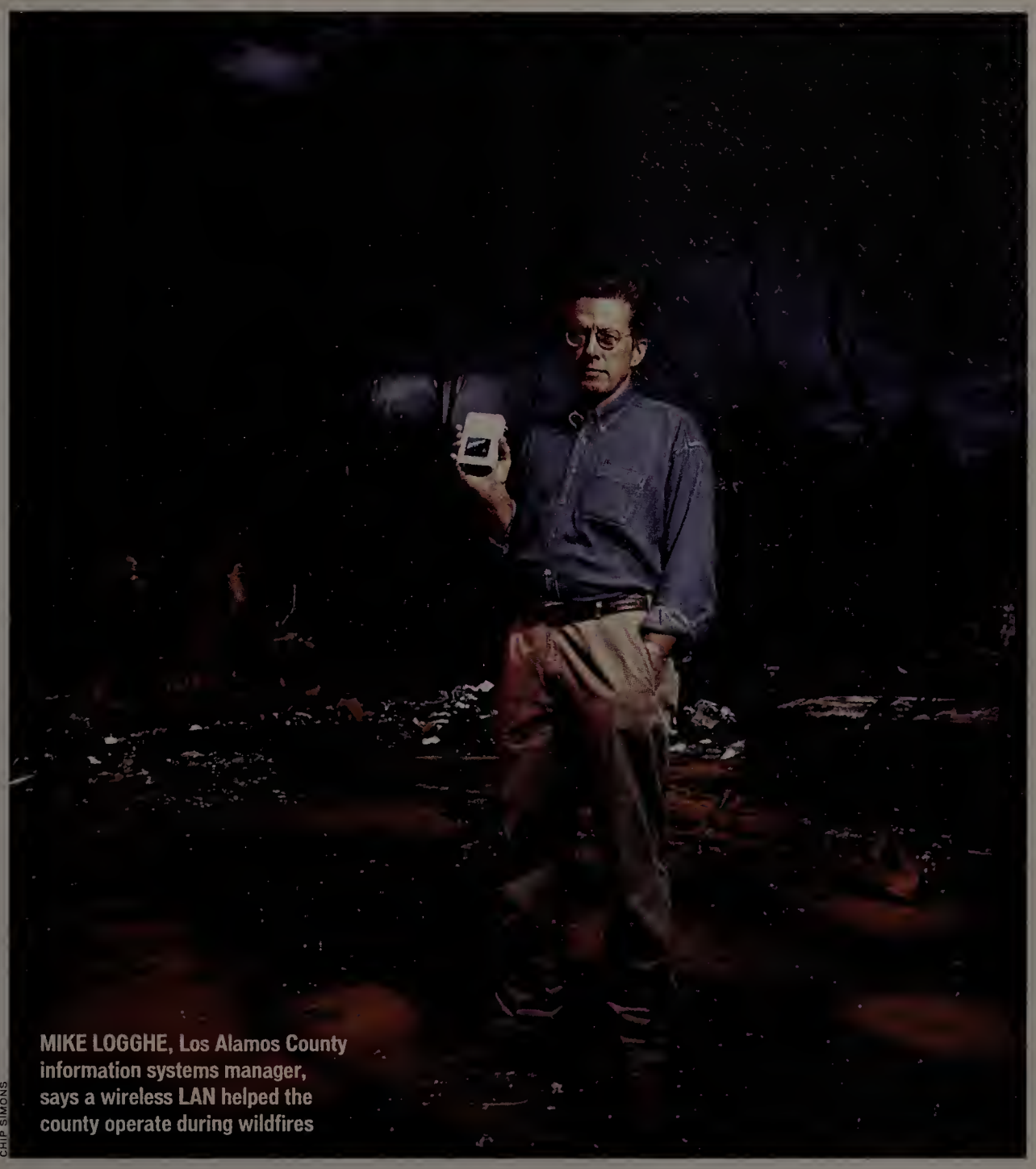
If you have your sights set on an overseas IT assignment, be advised: Foreign assignments are hard to find, can end in failure and rarely offer the perks and pay you're probably already getting. ▸ 68



CHIP SIMONS

**MIKE LOGGHE,** Los Alamos County information systems manager, says a wireless LAN helped the county operate during wildfires

# NO WIRES, NO BOUNDARIES

**THEY COST MORE UP FRONT** than conventional LANs, but wireless LANs can be less expensive to administer in the long run, and they allow managers to extend the reach of corporate enterprise information systems beyond office walls to the mobile worker or customer. One wireless LAN even outperformed the phone company in fire-ravaged Los Alamos, N.M.

60

# Software Builds Bridges In Science Community

*Canadian group uses GraphOn's Java-based tool for genetic data*

BY MEGHAN HOLOHAN

CHRISTOPH SENSEN, head of the National Research Council of Canada's (NRC) Bioinformatics Group, had a problem. He had to connect 800 scientists to more than 100 databases and about 1,000 applications to make the country's bioinformatics project work.

Canada's government created the NRC's Canadian Bioinformatics Resource (CBR) in 1995 to coordinate genetics research within the country and track work being done abroad.

The council's existing Unix platform was used to support the necessary databases, which included information regarding DNA sequencing and the status of various genome projects around the world, according to Terry Dalton, who is the information technology manager at the NRC.

## Streamlining Database Access

The scientists in the group were spread across Canada. Each of them was using a different X Window System emulator — software the users installed themselves to access Unix applications. Sensen said he and other council members soon saw the need to streamline access to the databases and shore up security.

Early last year, the CBR installed Go-Joe software from GraphOn Corp. in Morgan Hill, Calif., to link the organization through a common browser-based desktop application.

The software, which has since been renamed Bridges, connects the CBR's scientists to existing Unix applications and databases.

With Bridges, a user needs only a Web browser such as Netscape Navigator or Microsoft Internet Explorer to access the databases. To provide access, the software uses a small Java applet, which GraphOn says can be downloaded onto almost any Java-enabled desktop.

Bridges replaces a cumbersome process in which X servers communicated X protocols to X interfaces, which is standard for Unix systems, said Robin Ford, vice president of technology at GraphOn. This process often caused delays because of the frequency of communication between the user's terminal and the server, Ford said.

The CBR outsourced the software to application service provider GraphOn so scientists wouldn't have to install and maintain the software, Sensen said.

"User knowledge of Unix is not strong, and this service is the best way to stay connected," he said.

The researchers must stay connected to the databases so they can continue to work on their projects, said Dalton.

The information in the databases provides background for the projects and also prevents scientists from duplicating research.

The databases are updated nightly, so information is always being added, Dalton explained.

Bioinformatics combines biological sciences with practical computer knowledge — especially with techniques for using a computer to simplify data.

For example, the mapping of human genes is such a cumbersome process that an extensive database is needed just to store parts of the genetic code information.

To make matters more complex, the inconsistency of programs used to access the applications caused the system to slow down because the X server would have to send different X protocols to different X interfaces.

"How could we share information if everyone was using a different program?" Sensen said, adding that it was also difficult for each user to maintain his own software.

Bridges is ideal because the scientists just have to click on a Web site address to gain access to the Unix databases, according to Dalton.

## Instantly Web-Enabled

The Bridges technology allows a desktop-enabled program to instantly become a Web-based program, without changing any code, Ford said.

Because the program is centralized, Sensen said, it's easier for all the users to access it.

Before the NRC deployed Bridges, slow connections often prevented researchers from being able to access the databases, according to Dalton and Sensen.

"There are hundreds of users across the country. They need something to allow them to go into the database without thinking," Sensen said.

Dalton noted that security was also a concern because the old system had many access points, which left the system vulnerable.

Each member had an individual point of entry via his own computer and software, but Bridges now allows all the members of the CBR to access the databases through a single address.

Sean Hemmingsen, a senior research officer at the NRC, said the Bridges system has greatly improved the network. "This gives us the functionality and connectivity that we didn't have before," he said.

Bridges allows users to run Unix applications from any desktop, thick or thin. The application can be transmitted over anything, from a slow dial-up modem to a high-speed LAN, said Ford.

Prices start about $300 per user, but large organizations can get discounted rates.

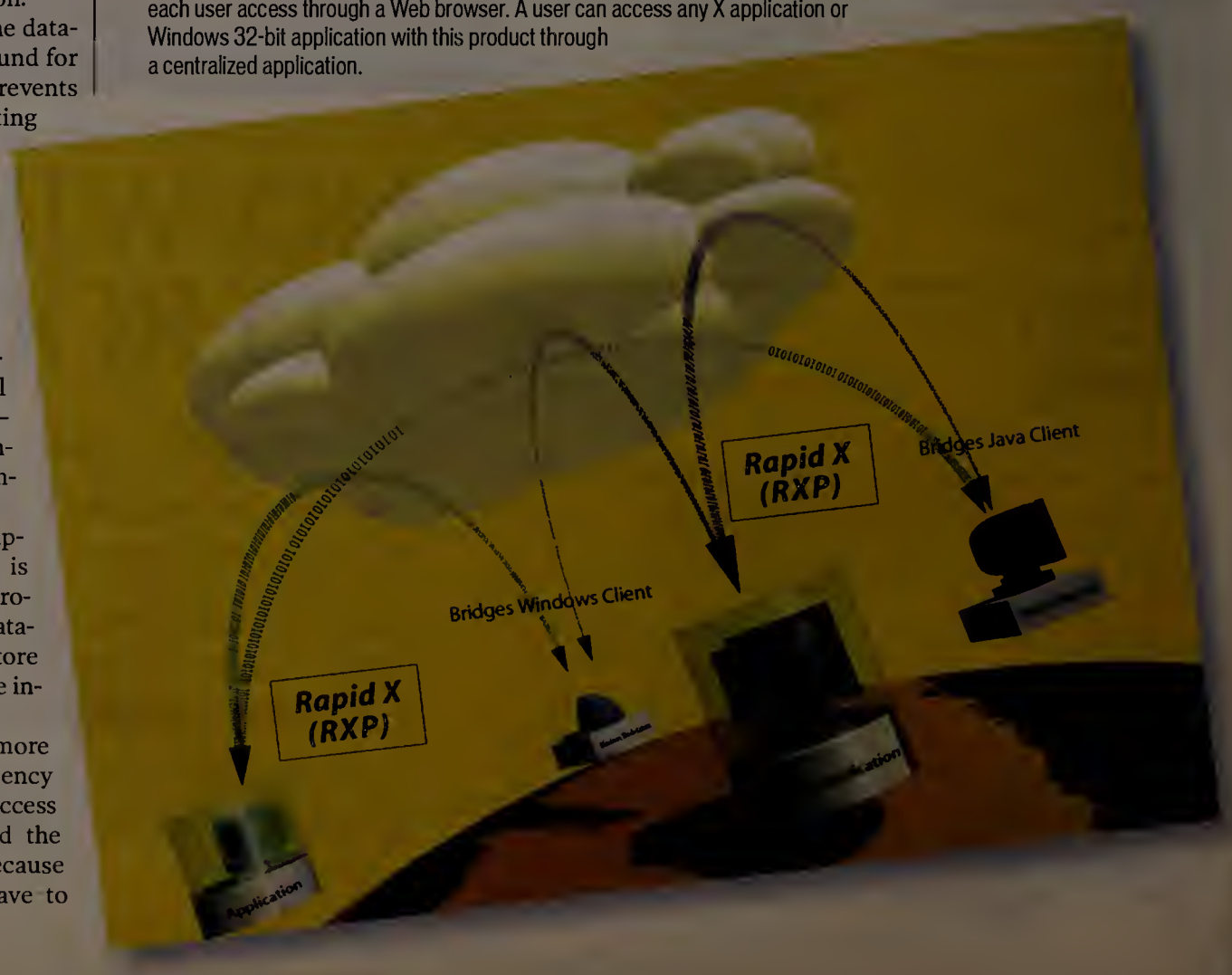
JUST THE FACTS

## Benefits of Bridges

- Speeds up system by **eliminating** the need for each user to have a different Unix X Protocol.
- Users have **access to all the databases** via a Web address, which allows access from anywhere in the world.
- Unifies the system without each individual user having to add software or hardware. As an application service provider, GraphOn is responsible for the **installation and maintenance** of the system.
- Few of the scientists have working knowledge of Unix; Bridges gives them **access** via a Web browser.
- Bridges **instantly turns** any desktop-enabled program into a Web-enabled program without changing any code.
- Bridges gives added **security** by creating a single way to access the databases, reducing the number of vulnerabilities.

## All Access

GraphOn's Bridges software changes Unix-based programs into Web-accessible applications without changing any of the code. Instead of requiring users to install different programs to handle Unix's X protocols, Bridges gives each user access through a Web browser. A user can access any X application or Windows 32-bit application with this product through a centralized application.



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# Parametric Modeling Tool Rehabs Design Process

BY ANN HARRISON

Until recently, like most users of computer-aided design (CAD) software for building design, Scott Brown had to interpret his boss's architectural drawings on trace paper and translate them into a software program that required each design change to be painstakingly replicated in subsequent documents. Ensuring the consistency of all drawings for a large building project was a time-intensive, tedious task with a frightening potential for error.

But Brown and his boss, Joe Frye, owner of Vaught Frye Architects in Fort Collins, Colo., are now using an innovative parametric 3-D modeling tool called Revit, which they said ensures the accuracy of evolving project drawings and allows tighter collaboration with clients and building contractors.

"We are incredibly excited about this tool — it lets us spend much more time designing and much less time drafting," said Brown. "You are actually creating a three-dimensional building on your computer that you can view in any way that you want to view it. I think it can revolutionize the building industry."

Already in use by five of the top 10 architectural firms in the U.S., the Revit parametric building modeler, developed by Revit Technology Corp. in Waltham, Mass., uses object modeling technology to improve the speed, accuracy and efficiency of CAD systems. Revit 2.0, released this month, gives users the ability to make automatic changes in building detailing and massing design while automatically calculating costs.

> [Revit] lets us spend much more time designing and much less time drafting.
>
> SCOTT BROWN, ARCHITECT TRAINEE, VAUGHT FRYE ARCHITECTS

Revit Technology was founded by veterans of Waltham, Mass.-based Parametric Technology Corp. in 1997.

"The technology that Revit employs represents a significant advance in productivity over the traditional 2-D, drawing-based CAD approach," said Jerry Laiserin, a Woodbury, N.Y.-based fellow of the Washington-based American Institute of Architects, who works as an architect and industry analyst.

"The ability to integrate attributes such as cost is something that has been very difficult for architects and engineers in the past to design to cost," said Laiserin. "We can now take a budget and back-solve the design, which is something that designers could never do before."

Brown, who is an architect in training, said Vaught Frye recently used Revit to design a Boys and Girls Club in Larimer County, Colo. He said Revit allowed the firm's architects to map out the existing school on the site and instantly see the relationship between that structure and the new building.

By inserting a tag for a specific room at the club, Brown said, architects could also

**USERS SAY** the Revit parametric building modeler, which shows 3-D views like this one, could revolutionize the building industry

Just a reminder that there are a growing number of reasons to host your Web site on a Microsoft® Windows® 2000 server.

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—data from Netcraft, June 2000 U.S. E-commerce Survey

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CUT AND SAVE TO EXPOSE THE "CREATIVITY" USED BY HARDWARE COMPANIES TRYING TO SELL YOU SOFTWARE.

# Dharma Upgrades Integration Tools

*Adds support for XML and legacy applications*

BY LEE COPELAND

Dharma Systems Inc. has released an update to its eUnify software suite, touting new support for legacy applications and XML in the application integration tool set.

Officials at the Nashua, N.H.-based company said eUnify 3.0 is designed to simplify the process of integrating legacy databases and applications with Web-based transaction systems.

EUnify 3.0, which was released earlier this month, allows developers to access both legacy applications and databases, using SQL queries. Previously, eUnify users had only Open Database Connectivity and Java Database Connectivity interfaces.

The new system also gives users access to SAP AG and IBM OS/390 and AS/400 applications through a Java interface. XML support has also been added to describe the return data that's extrapolated from legacy applications. Dharma officials said data returned

## Reaping the Benefits Of Object Modeling

Larry Rocha, CIO at design firm Wimberly Allison Tong & Goo in Newport Beach, Calif., says his company has been tracking the underlying object technology on which Revit is based since the early 1980s, with an eye toward how it would change the design process itself.

He noted that new modeling tools like Revit require new organizational frameworks and refined methods of communication within the project team itself.

According to Rocha, his firm is still at the early stages of evaluating process changes such as extracting a materials list from an object model that would traditionally be used by contractors to estimate costs.

"In object models, that responsibility may shift to architects, and we are constantly reviewing where are the liabilities and where are the risks," said Rocha. "To truly take advantage of the object model, we have to shift a lot of things in the industry, and the better you can understand those changes and the potential impact of everyone on the team, the better you can take advantage of it."

*– Ann Harrison*

immediately calculate square footage for the room and determine the size and cost of the overall building.

According to Brown, floor plans, elevations, building sections, window schedules and room finish schedules are all generated easily from Revit once the initial model is built. Revit allows design changes to be made anywhere by rippling design modifications through the entire documentation set.

Brown noted that while architects like Frye typically avoid CAD systems because of the specialized knowledge needed to operate them, Revit allowed him to immediately create computer-aided designs. According to Brown, it took Frye two hours to create an initial model for the club.

"Those lines he once drew on trace paper are actual walls with Revit, and he can create a block wall 1 foot wide and 25 feet tall, look at the model and call the owner two or three hours later. The time it saves is tremendous," Brown said.

A parametric wall model also presents the wall's relationship to other building components. The software automatically recognizes relationships that capture design intent. These relationships can express setbacks, code requirements and other important client and design constraints.

### Error Prevention

Brown said that if he changes the windows on a location, Revit immediately changes the floor plan, as opposed to necessitating that he go back and redraw it. If he wants to change the windows on an elevation drawing, Revit automatically updates the window schedule, which eliminates the potential for errors resulting from drafting inconsistencies.

"It really saves the CAD operator the monotony of just fixing drawings; [before], if you changed a window 6 inches, you had to go back and change the elevation drawings," Brown said.

Brown said he also used the tool to design a medical office complex that included five buildings on a single site. He said he was able to start with a particular square footage and look at the evolution of the complex as he changed the mass of each building.

"You can walk around the whole complex and view the model from all different angles," said Brown.

Brown noted that he's also impressed with Revit's technical support team, which he said can show him how to construct specific design features.

"I can e-mail them my file and they can bring it up on their screen, and I can watch them walk through it, and they send the file back and I haven't lost any time," said Brown. "I haven't talked to a live person at any of the CAD systems that I have worked with."

Revit is sold through a subscription service that allows subscribers to receive upgrades at no additional charge. Revit 2.0 is available to subscribers free of charge, via the Internet or on a CD-ROM. The monthly subscription charge is $199 for a single seat, $175 for two seats or $125 per seat for 500 or more users. Subscription fees also include all maintenance, enhancements, online training and toll-free telephone support.

from legacy systems is described with metadata tables that define the data after it gets transformed across application environments.

### Welcome Addition

The additional XML and legacy application support delivered by eUnify is a welcome boost to the application integration tools market, analysts said.

But while Sunnyvale, Calif.-based Vitria Technology Inc., a Dharma competitor, is one of several vendors that already provides solid support for data transformation, most companies in this space still need to improve the way they describe return data, said Dan Sholler, an analyst at Stamford, Conn.-based Meta Group Inc.

Using XML-based data structures and a set of Java interfaces to access legacy systems is an important new enhancement to eUnify, said J. Sasidhar, president of Dharma, because it allows developers to utilize business logic from other applications.

For example, using eUnify tools, a Web site could capture business rules from an SAP credit-check application and make use of those capabilities, Sasidhar explained.

Standards-based database drivers offer a uniform way to access data, but integration tools must also support heterogeneous data sources, according to Sholler.

Pricing for the eUnify suite starts at $60,000.

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# Pornography, Passwords, Perl and Other Problems

*Jude exposes employees' dirty little secrets — and his organization's lax password security*

PORNOGRAPHY IS PLAYING A big part in my life so far this week. Professionally, that is.

A check of our Internet access logs has turned up some interesting traffic. A few staff members have started exploring the vast amount of pornography that the Internet has to offer, and human resources has asked for "more details of their surfing habits." Providing these details turns out to be a very strange way to earn a living.

Security Manager's Journal

First of all, I have to get access to the proxy server logs. That turns into a mini-problem itself, as the proxy server runs on Unix, and I haven't used Unix for about seven years. Luckily, I sit next to some Unix professionals who are very helpful despite my almost constant stream of irritating queries on how to use the most basic Unix commands, like vi.

For those of you who don't know vi, the default Unix text editor since time immemorial, here's a quick example: To move your cursor to the end of a line, press *$*. To insert text after the cursor, press *a*, but not *A*. The latter inserts the text at the end of the line. Hit *)* for the beginning of the next sentence, and type *s* for "substitute" — or is that *r* for "replace?" When you're finished, press *ZZ* to save and quit. Or *:wq*. But not *:q* — that will quit without changes. Or was that *:q!*?

## It's a Dirty Job, but . . .

Once I've found the logs, we have to start searching them. And at 10GB-plus of compressed raw text per day, we're not going to be doing that by hand. I manage to get a tool that will decompress a day's logs, search through them for any words I specify and then dump the output into a raw text file.

Then, in the most bizarre job of all, I have to check up on some of the sites — it's not always possible to tell which are pornographic just from their Web addresses. This puts me in the rather strange position of being paid to surf porn sites in an effort to make sure people aren't surfing porn sites at work.

At this point, our Internet engineering team starts making noises about the amount of processing power I'm tying up on the Web proxy. Luckily, two student trainees have just started work, so for their first introduction to corporate life, I get them to write a simple Perl script to search one week's logs at a time for pornographic Web surfing.

After we've finished mucking about in Unix, I have a 6.5MB text file detailing every HTTP request four people submitted to our Web proxy over five days — and there are some extremely strange Web sites listed there.

From here on in, it's the HR department's problem. I just duly pass on the information.

## Password Problems

Back on slightly more technical ground, I've decided to get ambitious and start a pilot project of my own. I'm going to try to get rid of passwords.

I have 22 passwords and personal identification numbers (PIN) that I have to remember on a regular or semi-regular basis. I can be exact because they're written down and I've counted them. Yes, I know that's a dreadful security risk and, as a security manager, it sounds startlingly hypocritical, but I simply can't remember them all. I could try making them all the same, but then, if someone were to break one, they would have them all. I could try making them all easy to remember, but then they would all be easy to guess.

If I can't cope with that many passwords, how can I expect everyone else in the company to do so?

In fact, I know they don't. Our audit department runs password scanners to test password security, and they are mildly horrified at the results. I'm mildly horrified at how inefficient the audit department's password scanner is.

I could give them the Web address for a much better one if they would only ask (L0phtcrack is one example).

My employer has one of the most lax password regimes I've ever seen, but I can't really say I blame whoever adopted it. In the face of packages like L0phtcrack and its brethren, a password is of little use. To even attempt to make it work, you have to surround it with a draconian list of strictures and regulations that end up getting in the way of people trying to do actual work.

## Smart Card, Simple Solution

There's a simple solution: token-based single sign-on (SSO). Instead of a password, users authenticate themselves to their PC using a smart card and a PIN, which could be short and need not expire. Once authenticated to the workstation, further authentications (to servers, company Web sites and others) would be performed transparently by the workstation, without the user even knowing about it.

Anyone who has ever been involved in trying to implement token-based authentication is probably shaking his head in expectation of a column in a few months' time expressing bitter regret about ever starting this project.

SSO and token-based authentication both have a reputation for being exceptionally difficult to implement.

I know one man who has spent the past four years of his life trying (with some success) to implement an SSO system across a global company. At one point, he managed to corrupt all of his European domain controllers, effectively locking half of his company off the network.

But I'm beginning to think it might be possible to actually implement a token-based SSO system here.

Our rather efficient physical security guys are just putting in a new proximity-card access-control system, and the manufacturer has confirmed that it can supply dual-use cards that function as both proximity cards and smart cards. That would let us handle the card issuance, administration and revocation processes in a single stroke.

Another team is evaluating Windows 2000 for a possible rollout in a year or so. Windows 2000 not only has some built-in functions for dealing with smart cards (there goes the need for bespoke client authentication software), but also implements Kerberos, which is a good SSO authentication protocol.

It seems like a lot of the components are already in place. I just have to persuade senior management to give me enough money to buy a few bits of kit. And then I have to try to make it work on a small scale. If I can do that, I'll put the technology on the desks of a few key business and technical people and let them see how useful it is. If that works, then there's all the project management, interminable meetings, office politics and budgetary nightmares of a large project to face. But let's leave such pleasant thoughts for later. ◗

## THISWEEK'SGLOSSARY

**Proxy server:** An Internet server that controls client computers' access to the Internet. Using a proxy server, a company can stop employees from accessing undesirable Web addresses, improve performance by storing Web pages locally and hide the internal network's identity. Proxy logs can show where users have been surfing.

**Kerberos:** A network authentication protocol that allows one computer to prove its identity to another across an insecure network through encrypted messages. Once a person's identity is verified, Kerberos gives the two computers encryption keys for a secure communication session.

**Perl:** A highly portable, free open-source language developed by Larry Wall that has become the de facto Web scripting language.

**Password scanner:** Sophisticated software tools that can be used to test and break passwords on Web servers and other host systems. L0phtcrack is one example (see link below).

## LINKS:

***www.defcon1.org/html/Networking_Articles/Firewall Ipfw/vi_/vi_.html:*** This Web site is a good place to learn about FreeBSD and other flavors of Unix. Start with the link to the beginners' guide to the vi editor.

***www.lopht.com:*** This site is the source for L0phtcrack, a Windows NT tool that can be used by IT managers to audit NT passwords – or by crackers and hackers to crack NT passwords.

***msdn.microsoft.com/library/psdk/secspi/aboutsspi_5pyk.htm:*** This Microsoft document provides an overview of Kerberos Version 5.

***www.perl.com/pub:*** This Web site is an excellent resource for downloading the latest Perl source code and documentation.

■ This journal is written by a real security manager, whose name and employer have been disguised for obvious reasons. It's posted weekly at *www.computerworld.com* to help you and our security manager – let's call him Jude Thaddeus – better solve security problems. Contact Jude at jude.t@lycos.com or click on Computerworld.com's Security Watch community forum to participate in discussion topics.

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# Data and Image Compression

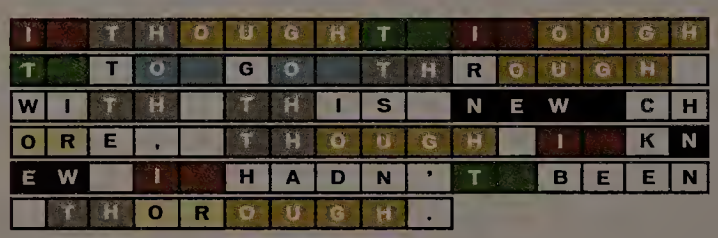
DEFINITION

**Compression** is a way of encoding digital data so it takes up less storage space and requires less network bandwidth to be transmitted. There are two basic types of compression: lossy methods, in which some data is lost when the files are decompressed, and lossless methods, in which no data is lost when the files are restored to their original format.

## How Compression Works

*Here's one simplified compression technique:*

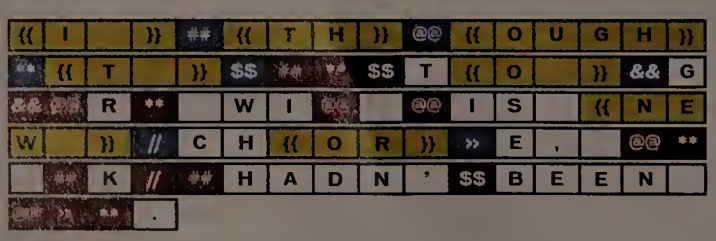
▸Take this sentence: "I thought I ought to go through with this new chore, though I knew I hadn't been thorough." Many elements are repeated (color-coded below for clarity):




▸Now, set up a dictionary where each repeated character string is mapped to a single, abbreviated code or token (represented here by a double symbol):

| | | | | |
|---|---|---|---|---|
| I [space] | ## | | new [space] | // |
| th | @@ | | or | -> |
| ough | ** | | definition start | {{ |
| t [space] | $$ | | definition end | }} |
| o [space] | && | | | |

▸The first time we encounter a string, we mark it as coded; thereafter, we use only the code. Now, the sentence looks like this, with defined strings of characters in yellow, their code definitions in blue, subsequent uses of these codes in red and unaltered characters in white:




▸In this single sentence, we have reduced 90 characters to 84 – admittedly, not a large difference, but a longer document would have many more tokens and repetitions and thus would yield significantly greater compression.

BY LEE COPELAND

As long as bandwidth is expensive and people are impatient, data compression is here to stay. Simply put, compression methods crunch data — text, graphics, audio or video — into a computer-decipherable shorthand that's 10% to 99% of its original size. The data takes up less storage space and requires less bandwidth to be transmitted over the Internet. In addition, many methods can squeeze multiple files into a single file called an archive.

There are two basic methods for compressing data: lossy and lossless. Lossless techniques compress data without destroying or losing anything during the process. When the original document is decompressed, it's bit-for-bit identical to the original. Lossy techniques let the file be compressed even smaller, but some data is lost forever.

"Lossy compression makes a trade-off: You give up accuracy for higher compression," says Steve Hoffenberg, director of product management at Sound Vision Inc., a digital imaging firm in Framingham, Mass. "If you're compressing bank records, you want to be sure they're identical before and after. But with an image or audio or video files, it's generally not crucial to restore every bit of data."

### Lossless Compression

Lossless data-compression programs search through documents for redundant or repetitive data and then encode it. For example, a text document may contain 200 empty spaces, 100 instances of the word *in* and 50 instances of the words *the defendant said*. The program searches for these repetitive words, phrases and spaces and then replaces them with an abbreviated bit pattern or numerical symbol for each one, which it stores in a "dictionary."

When the file is decompressed, the bit patterns are decoded and the data is restored. No data is lost or altered.

There are many data compression programs, such as StuffIt (for Macintosh computers) by Aladdin Systems Inc. in Watsonville, Calif.; WinZip (for Windows) by WinZip Computing Inc. in Mansfield, Conn.; and PKZip by PKWare Inc. in Brown Deer, Wis. PKZip is the most popular program for DOS and Windows compression.

Jim Peterson, PKZip engineering manager at PKWare, says Internet growth makes data compression important.

"It's important to compress data, because storage space comes at a price and bandwidth comes at a price," says Peterson. Typical data documents such as Microsoft Excel spreadsheets or PowerPoint presentations can be squeezed to half their original size, but documents with a high degree of repetition and numbers can be compressed to 20% of their original size.

### Lossy Compression

For graphics, video and audio signals, lossy compression is most commonly used. Audio and video can be compressed to 5% of their original size using lossy compression, but the data loss is seldom detectable to the human eye or ear at this level. For example, a lossy image may be less sharp than the original, making blades of grass appear blurred.

Another factor, says Carl Garland, an analyst at Current Analysis Inc. in Sterling, Va., is that the physical copper wire network can't handle uncompressed audio and video signals well. "The last mile, from the switch location to the customer's house or business office, is handed off to [a] twisted-copper pair, and there are a lot of bandwidth constraints, because data is transmitted at different speeds," says Garland.

For example, for a spreadsheet, it doesn't matter which data packets arrive first, he says. But for a phone call or video stream, rapidly changing transmission speeds would distort the sound quality or image. ◗

## Compression Standards

**Joint Photographic Experts Group (JPEG):** A still-image, lossy compression method that uses discrete cosine transform equations to compress images at a ratio of up to 20-to-1, without noticeable loss.

**Lempel-Ziv-Welch:** This algorithm, used in many compression formats, including graphics interchange format and Tag Image File Format, takes each input sequence of bits of a given length and creates an entry in a lookup table, along with a shorter code. Lookup entries are part of the compressed file, enabling the decoding program to rebuild the table.

**Moving Pictures Experts Group (MPEG):** A lossy compression method for video. MPEG-1 is used for CD-ROMs and video CDs. MPEG-2 compresses video for regular and high-definition television.

**MPEG Audio Layer 3 (MP3):** An audio compression technology that's part of MPEG-1 that uses perceptual audio coding to compress CD-quality audio by a factor of 12.

**Fractal:** A lossy compression method for color images that's well suited for natural objects, with compression ratios up to 100-to-1.

**PKZip:** A popular lossless compression shareware program from PKWare Inc. The program uses an algorithm and a data library to encode or archive multiple date files. PKUnzip decompresses the files to their original states.

**Wavelet:** This form of lossy compression uses a mathematical function that can compress images to a greater extent than other methods – sometimes to only one-fourth the size of a similar image compressed with JPEG.

**Windows Media Technology:** This Microsoft Corp. product delivers better sound quality than MP3 for same-size files, as well as near-DVD-quality video.

*– Lee Copeland and Russell Kay*

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# Always a Doctor in The House

**The Next Generation Internet will bring the healing arts to remote places and speed information to save lives. By Barbara Forster**

DOCTORS who make house calls are ready for a comeback, but they won't be carrying little black bags. Instead of coming to a patient's door, the 21st century physician will visit via the Next Generation Internet (NGI).

Researchers across the country have already created models that connect doctors with patients over the Internet. Now they're developing other innovative medical uses for NGI, the federal government's name for the high-speed, high-security Web of the future.

The projects are part of a three-phase, multimillion-dollar program funded by the National Library of Medicine (NLM) in Bethesda, Md., to demonstrate the potential uses of NGI. The hope is that the Internet will provide virtually error-free service, security and medical-data privacy, "nomadic computing," network management and infrastructure for collaboration.

Telemedicine is hardly new, but sites are limited because current connections are expensive and slow. NGI promises service that's fast, cheap and readily available. "It's also the guarantees of NGI — low jitter, low latency, reliability and security — that are important," says Michael Ackerman, assistant director for high performance computing and communications at the NLM.

Announced in 1996, the NGI program combines resources from various government agencies, including the National Science Foundation, the Department of Defense, NASA and the NLM. The first phase focused on plans. The current emphasis is on demonstrations, tests and, eventually, scalability.

## The Doctor is Online

A house-call project being tested at kiosk-type sites in Greenville, N.C., is receiving rave reviews.

"Patients love it," says Dave Balch, director of the telemedicine center at the Brody School of Medicine at East Carolina University. "They like the convenience, the control and they feel they are getting better attention."

Clement McDonald, director of the Regenstrief Institute for Health Care in Indianapolis, reports similar results in his nursing home project, which uses nomadic computing. Doctors visit patients through cameras and handheld computers that are wheeled to rooms by attendants.

Researchers from the University of Maryland in College Park and TRW Inc. in Cleveland are currently transmitting multimedia diagnostic information from ambulances to doctors in real time. While patients are en route to the hospital, video and audio data are fed to servers and then to emergency-room physicians who review the information on computers. Diagnoses, appropriate emergency actions and any necessary drugs are ready when patients arrive.

Even better, according to David Gagliano, TRW's manager of Internet technologies, doctors won't be glued to hospital monitors. A physician can do this from his office across town or at a convention.

"It's a great way to bring expertise to [medical] problems and emergency resources directly to sites," he says.

Thousands of uses for NGI are possible, from defusing bombs to administering sobriety tests. Doctors could provide global disaster response without risking the safety of medical crews.

Virtual reality models are geared to globalizing medical education. Soon, medical students will examine 3-D virtual human cadavers and learn surgical procedures by "operating" on virtual reality models. Weeks of reading and studying one-dimensional images will become sessions of computer manipulations.

The technology is new, but the learning process is traditional, argues Dr. Jonathan Silverstein at the University of Illinois at Chicago. Just think of these simulations as cognitive maps for the brain, he says.

"When you get a new object, you turn it over and over to become familiar with it," he says. "That's how we learn."

In addition, the maps are a bonus for surgical education. Because current training systems are experiential, a surgeon doesn't gain experience with all diseases or anomalies during his apprenticeship. Instead, he learns on the job.

"With this technology, we can show those rare variations," adds Silverstein.

Virtual models are gaining significance as surgery becomes less invasive, thus reducing hands-on experiences.

## Fast, Faster, Fastest

NGI, which is expected to be 100 to 1,000 times faster than today's Internet, has excited researchers at the Kennedy Krieger Research Institute Inc. in Baltimore. Doctors there are establishing an imaging network with a critical patient mass to evaluate therapies for adrenoleukodystrophy, a rare and fatal neurologic disorder.

"We need 500 patients, but no one country can supply that many," says Hugo Moser, director of neurogenics at Kennedy Krieger.

With the network in place, doctors can share magnetic resonance imagery information in 45 seconds, compared with current transmissions that take at least 20 minutes.

Reasonable turnaround times for reimaging also will be the norm. "This same kind of technology is valuable for other diseases, too," adds Moser.

Balch predicts a flood of demand once "ubiquitous access" is a reality. ◗

*Forster is a freelance writer in Boston.*

## Examples of NGI Phase II Research Projects

| | | |
|---|---|---|
| **Personal Internetworked Notary and Guardian** | The Personal Internetworked Notary and Guardian proposal aims to provide a patient-controlled personal medical records system. | Children's Hospital, Boston |
| **Biomedical Tele-Immersion** | By combining teleconferencing, telepresence and virtual reality, Tele-Immersion enables teachers and students to interact with 3-D models and to point, gesture, converse and see one another. | University of Illinois at Chicago |
| **Indianapolis Test Bed Network for NGI Applications to Telemedicine** | Indiana University proposes to convert the Indianapolis Network for Patient Care into a test bed of NGI technologies, including IP security, televideo applications at nursing homes and IP roaming capabilities with portable wireless workstations in clinical settings. | Regenstrief Institute for Health Care, Indiana University |
| **Internet Protocol Video Telemedicine and Patient Cardiology Education** | The purpose of this project is to address the technical issues impacting the delivery of telemedicine and sophisticated medical education using IP video over the NGI. | East Carolina University School of Medicine Center for Health Science Communication |
| **Medical Nomadic Computing Applications for Patient Transport** | The objective of this project is the real-time transmission of multimedia patient data from an incident scene and during transport to a receiving center, enabling diagnostic and treatment opportunities prior to the patient's arrival. | University of Maryland, Baltimore |
| **Networked 3-D Virtual Human Anatomy, Phase II** | Project proposes to demonstrate and assess the use of Web-based, 3-D virtual humans to enhance traditional methods of teaching anatomy. This will be accomplished with audio, graphic and haptic interfaces. | University of Colorado Health Sciences Center, Denver |

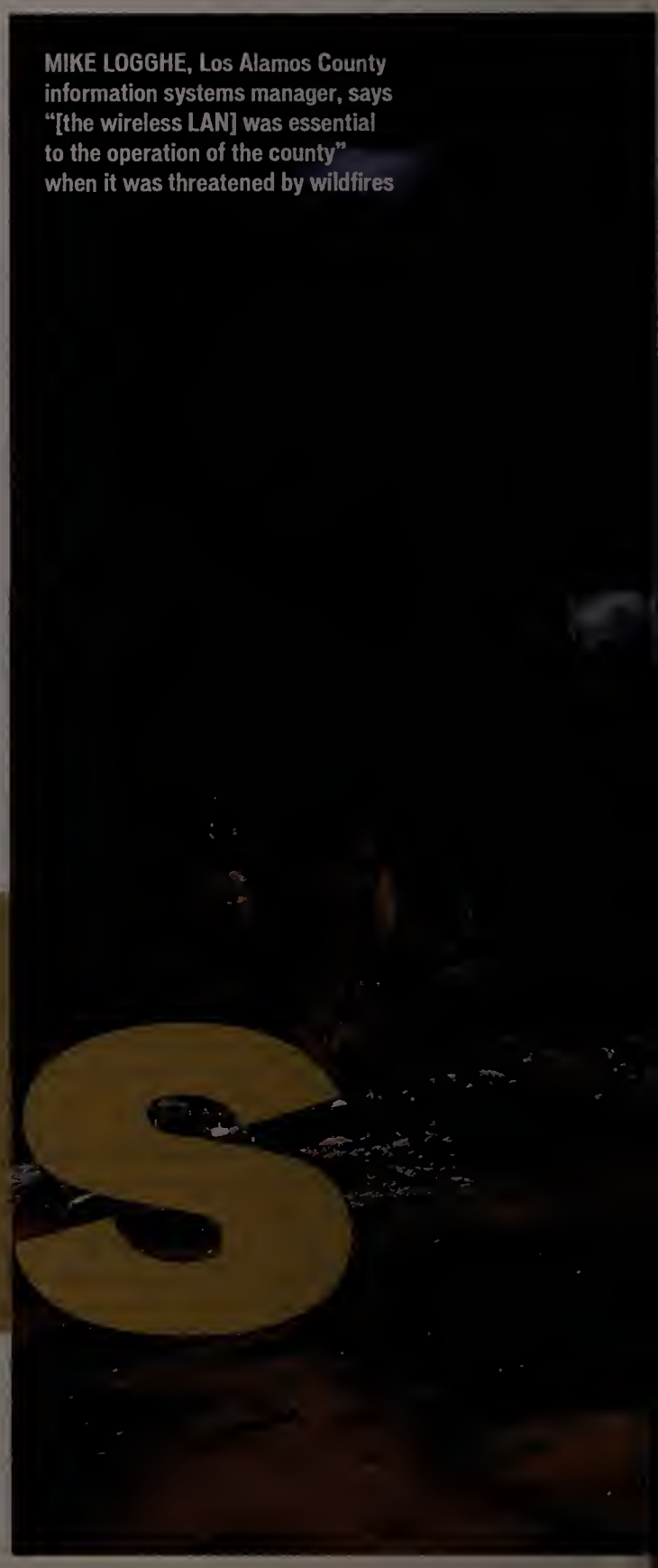
They cost more, at first, than conventional LANs, but in the long run, wireless LANs can be less expensive to administer. One even outperformed the phone company in fire-ravaged Los Alamos, N.M.
By Bob Brewin

WIDE-BAND LAN technology has started to take the Internet and corporate intranets places they have never gone before.

The airline industry has started to deploy wireless LANs on jetliners to hook them into enterprise information management systems. Hotel chains and rental-car companies plan to deploy them to support mobile check-in and check-out operations.

Corporate information technology managers have started to adopt wireless LAN technology — which operates worldwide in the unlicensed 2.4-GHz band — as a viable alternative to Ethernet for support workers who don't want to spend their days tied to a desk. They're installing buildingwide or campuswide networks that support high-speed connectivity (up to 11M bit/sec.) for laptops equipped with wireless network interface cards operating anywhere within the 100- to 300-foot range of the LAN antenna, called an access point.

Fine-tuning wireless LAN technology can also turn it into a low-cost alternative to a wired network serving remote locations. The county of Los Alamos, N.M., opted for wireless LAN technology as the quickest and cheapest means of linking its seven fire stations, police headquarters and utilities departments.



MIKE LOGGHE, Los Alamos County information systems manager, says "[the wireless LAN] was essential to the operation of the county" when it was threatened by wildfires

# LANs without wires

Having this network paid off in May, when a forest fire caused the evacuation of much of the city of Los Alamos, home to a U.S. Department of Energy nuclear weapons laboratory. Even when the local phone system quit, the wireless LAN worked.

Once a company equips its employees with laptops outfitted for wireless LAN connectivity, road warriors can tap into a growing number of high-speed public access networks being installed by at least three vendors worldwide. Wireless LANs operate globally under an Institute of Electrical and Electronics Engineers Inc. standard (802.11B), which ensures compatibility among products from competing vendors.

This standardization was reinforced last August with the formation of the San Jose-based Wireless Ethernet Compatibility Alliance, whose members range from vendors like Dell Computer Corp. in Round Rock, Texas, and Compaq Computer Corp. to infrastructure providers such as the Utrecht, Netherlands-based Orinoco division of Lucent Technologies Inc.; 3Com Corp. in Santa Clara, Calif.; and Cisco Systems Inc. in San Jose.

The industry has gained so much momentum that Bob Egan, an analyst at Gartner Group Inc. in Stamford, Conn., says he views this "as the year of the wireless LAN." Gartner is forecasting that wireless LAN revenue will total $487.5 million this year vs. $187.9 million two years ago, and that the total value of installed wireless LANs will be $35.8 billion in 2004.

While wireless LANs can support ubiquitous computing at close-to-Ethernet speeds, vendors, analysts and users all caution that a wireless LAN is definitely not a high-speed wide-area network accessible anywhere by anyone with a cell phone. (That technology will have to wait until cellular carriers deploy their third-generation networks, with widespread rollout not expected for three years.)

Users can typically connect up to 300 feet from a wireless LAN, depending on terrain and building type. Users who want wider coverage need to install more

CHIP SIMONS

access points. Avis Group Holdings Inc. in Garden City, N.Y., for example, may use as many as 20 access points to serve its multilevel operations at the new San Francisco airport central rental car facility, according to Vinnie Luciano, a vice president at Symbol Technologies Inc. in Holtsville, N.Y., which is installing wireless LANs at about 700 Avis locations.

But high-gain antennae can extend the reach of wireless LANs to miles. Integrity Networks Inc. in Albuquerque, N.M., installed high-gain antennae and wireless LAN gear from BreezeCom Inc. in Carlsbad, Calif., to connect a fire station in White Rock, N.M., to the wireless LAN hub six miles away at the Los Alamos police station.

Los Alamos County information systems manager Mike Logghe says costs influenced his decision to use Integrity to install a wireless LAN for 3M bit/sec. connectivity among county buildings.

"[Local telephone company] US West presented me with a contract proposal that would cost me $5,000 a month to lease T1s [1.54M bit/sec. circuits] to do the same job," Logghe says.

Rick Bagley, a senior network systems engineer at Integrity Networks, says, "Our return-on-investment study showed that [it would take the county] only 12 to 14 months [to recoup] its investment."

When a "controlled burn" that was started by the National Park Service threatened the city of Los Alamos, Logghe says, "[the wireless LAN] was essential to the operation of the county." As the US West Inc. phone system in the area crumbled under the load, many county operations were managed via e-mail over the wireless LAN.

The flexibility inherent in wireless LANs allowed Logghe to quickly set up an emergency command center during the fire for the Federal Emergency Management Agency. "We just put up an antenna at the school and got it up and working in three hours," he says.

## Selling Points

The fact that wireless networks don't require extensive cabling is a key reason Montvale, N.J.-based Mercedes-Benz of North America Inc. decided to use them in more than 200 dealerships nationwide, according to Larry Roll, telecommunications supervisor at the firm.

"Mercedes dealerships are showplaces, and when you have marble walls or floors, you don't want to drill holes in them," Roll says.

The Lucent wireless LAN that Roll is installing is designed to support administrative and sales functions as well as vehicle servicing and repair — often housed in one or more buildings separate from the showroom, he says. One or two access points will usually cover both the showroom and shop buildings, he says, while running wires between buildings "would cost an obscene amount."

Although the up-front costs of a wireless LAN are higher than those of a wired LAN, he says, "once you move a person once, you've paid for it."

According to a recent Gartner Group study, the most expensive component in wireless LANs is the network interface card, which averages about $250 per device, compared with an average of $80 for a 10M to 100M bit/sec. wired network interface card. The cost for access points runs from the $1,000 list price charged by Tel Aviv-based BreezeCom to the more than $4,000 list price for Symbol's access points.

Despite these higher up-front costs, the Gartner report says, wireless LANs can be worthwhile "where utility, application and ease of use overcome basic fixed-cost issues."

**[ USE CAUTION IN CONFIGURING OVER-THE-AIR NETS ]**

Larry Kinder, senior vice president at Avis Group, says he believes the high-speed wireless LAN and advanced handheld devices the company plans to deploy "will enhance the customer experience. . . . [I]t's going to give the customer a very quick way to check in and return a vehicle."

Danny Hudson, vice president of distributed systems at Starwood Hotels & Resorts Worldwide Inc. in White Plains, N.Y., says improved customer service is what prompted the company's decision to test wireless LAN mobile check-in and checkout systems, with the first pilot system slated for activation at a Sheraton hotel in Parsippany, N.J., this month.

When lines back up at the front desk, Hudson says, he wants Starwood managers to be able to deploy wireless terminals to check in customers anywhere.

Airlines have started to embrace wireless LAN technology to manage aircraft. While it might seem a no-brainer to include the most expensive and visible asset of any airline — its multimillion-dollar aircraft — in an enterprise information management system, Ed St. John, a program manager for air transport systems at Rockwell Collins Inc. in Cedar Rapids, Iowa, says that until now, a lack of bandwidth and regulations have made it difficult to connect planes.

Air-to-ground communication systems can support only short, canned text messages. Regulatory authorities such as the Federal Aviation Administration have strict requirements regarding the inclusion of commercial systems, such as wireless LANs, on aircraft. But, St. John says, Annapolis Md.-based Arinc Inc., a global communications provider, has developed worldwide standards for aircraft wireless LANs that should eventually gain widespread adoption.

Rockwell Collins has developed an integrated avionics system that ties a standard wireless LAN on the aircraft into ground stations that are accessible only when the aircraft is on the ground. The firm is also working on a system that extends the aircraft wireless LAN via satellite to anywhere on the globe.

Condor, the charter airline affiliate of Deutsche Lufthansa AG in Germany, has installed a wireless LAN on three of its Airbus 320s. St. John says laptops in the cockpit that are equipped with wireless LAN cards tie the crew into the wireless LAN server, which in turn communicates via an external antenna with the ground access points.

The Condor A320 wireless LANs also provide e-mail service to passengers. And while their needs are less dramatic than those of people facing a wildfire, passengers may soon echo the words of Logghe.

When the wireless LAN kept going even when the phone system couldn't, "we became believers in the capabilities of wireless," he says.

## Watch That Security!

Since all wireless LANs operate "on the air" in the same portion of the 2.4-GHz band, users, analysts and vendors suggest caution in installing and protecting them.

John Pescatore, an analyst at Stamford, Conn.-based Gartner Group, who formerly worked at both the National Security Agency and the U.S. Secret Service, says wireless LAN users must ensure that the built-in Wireless Equivalent Privacy (WEP) 40-bit encryption protocol is turned on after installation.

Pescatore estimates that only 20% of users turn on the WEP feature. "Without it . . . you are vulnerable to anyone who is motivated to overhear your traffic," he says.

The School of Public Health at Johns Hopkins University in Baltimore has operated a multibuilding wireless LAN from Brampton, Ontario-based Nortel Networks Corp. for almost four years and has a built-in dual-layer security system, says J. P. Garvin, the school's network services manager.

Each user is issued a key that has to be configured on the wireless access point as well as the client in order to gain entry to the network, he says.

Each wireless LAN card also has a hardware-defined address, which in turn is mapped into the server.

Wireless LAN manufacturers readily acknowledge the security problems with the IEEE 802.11B standard and have recently taken steps to beef up their security.

Jan Haag, wireless product manager at Lucent's Orinoco division, says that although his company ships its products with security features turned off — a requirement of the Wireless Ethernet Compatibility Alliance — Lucent does offer 128-bit and "per-session" encryption based on public-key infrastructure.

John Drewry, director of product management at the wireless connectivity division of Santa Clara, Calif.-based 3Com, says his company also offers optional 128-bit encryption, as well as a new wireless LAN security feature based on the Remote Authentication Dial-Infuser Service protocol used to secure virtual private networks. — *Bob Brewin*

# Few companies can build a good e-commerce site without good third-party tools and support — make that lots of support.

By Howard Millman

IF YOU WANT to make it in the world of e-commerce, you can't get by with just a static, information-dispensing Web site. You really need an integrated e-commerce site if you want to speed order processing, improve customer relations, reduce costs, expand your client base and increase revenue. At least, that's the theory.

But is it the reality? The answer depends on how successful you are at pairing the right e-commerce engine with the right integration team to create and manage your site. *Computerworld* interviewed chief technology officers, chief operating officers and CEOs at seven companies that recently acquired e-commerce platforms from BroadVision Inc., CommercialWare Inc., Intershop Communications Inc. and InterWorld Corp.

We learned that most of the difficulties the executives experienced arose when integrating existing back-end operations such as customer relationship management (CRM), enterprise resource planning, inventory and order-fulfillment systems.

Their experience confirms what enterprise IT managers have long known; it's not only the quality of the software that you select but also the quality of the support services available when things go wrong. Because things will go wrong.

## Integrating Multiple Companies

For Andre Brysha, executive vice president and chief marketing officer at Irvine, Calif.-based Phobo.com Inc., an offshoot of Beltsville, Md.-based Ritz Camera Centers, e-commerce was a natural extension of the parent company's 80-year-old catalog and mail-order business. One of the largest specialty camera retailers, Ritz Camera also operates Boaters World and OuterBanks Outfitters.

"We acquired e-commerce because we realized that if we don't cannibalize our own customers and expand into e-commerce, someone else will," says Brysha. After reviewing several products, Brysha chose Natick, Mass.-based CommercialWare to help launch Phobo.com (a contraction of *photograph* and *boating*), which receives 5 million page views per month.

"It came down to a decision between CommercialWare and Microsoft's platforms," he says. "CommercialWare could better integrate with our IBM AS/400 legacy system. That integration was critical. We did not want to create new pricing, purchasing and inventory management systems."

E-Commerce

# Committed to Their Softw

Although success came eventually, the integration proved challenging. "There are no true turnkey, seamless integrations," says Brysha, "but overall, we're very pleased with CommercialWare. And even though we had some problems, they were resolved. It's an ongoing learning process."

What would Brysha like to see in future releases? He says he would ask for "a completely integrated solution for customer database management and promotion management to eliminate the need for third-party add-ins."

Brysha says the company made the right software choice. "Without e-commerce, we wouldn't have the amount of business we have today," he says.

## Better Health and Revenue

Expanding its mail-order business provided the impetus for adopting e-commerce at Swanson Health Products Inc., a vitamins and natural food purveyor in Fargo, N.D.

"We were a mail-order company," says Glen Pirie, chief operating officer at Swanson. "We acquired e-commerce capability because our customers wanted it."

Swanson chose CommercialWare software to build its Web site because of the application's back-office integration capability. The software's inventory, shopping cart and credit-card processing features matched Swanson's needs. The company's site gets about 1 million hits per month.

"People find Internet shopping much quicker than thumbing through our catalog," says Pirie. "It's a great program. The beautiful part about CommercialWare is that it links everything in the order process together."

Dean Plantz, Swanson's director of MIS implementation, says the rollout was "a seamless operation, but the process will never be finished."

Swanson boasts a significant increase in customers since it added e-commerce. "Thirty percent of the orders received from our Web site orders are new customers to us," says Plantz. "We know that because we run cross-checks to see if we've ever mailed them an acquisition piece."

Pirie says he would like to see the next generation of CommercialWare products do a better job of simultaneously managing multiple promotions. "We want to be able to queue up customer data in real time, sync it with our other pending offers and standardize pricing," he says.

## Bundling Up Coat Sales

When Burlington Coat Factory Warehouse Corp., a clothing wholesaler and retailer in Burlington, N.J., began its search for an e-commerce platform, modernization was a primary goal. Its Web site provided only static information. A virtual dinosaur, the site required customers to note product information and call in orders.

"We implemented e-commerce to bring our existing Web site into the 21st century," says Burlington's Web manager, Ginger Atwater. "We wanted to automate payment processing and catalog maintenance, take credit-card orders securely, offer shopping cart capabilities and automatically capture order data."

Before deciding on New York-based InterWorld, Burlington investigated several products, including Redwood City, Calif.-based BroadVision and San Mateo, Calif.-based Blue Martini Software Inc.

"It was like comparing apples and oranges. Every vendor has its own definition of e-commerce," says Atwater. "We had to constantly ask ourselves, 'What do we really want and need, apples or oranges?' "

In part, Burlington selected InterWorld because Dayton, Ohio-based NCR Corp., a trusted vendor, recommended the product and helped with the rollout and integration.

Atwater says the decision was a good one. "We are impressed with InterWorld and their support people. They came and did what they said they'd do. In this era, that's pretty good." Atwater says she would like to see only one improvement: "We'd like to see expanded functionality in the freight area."

InterWorld's encyclopedic functionality put pressure on Burlington to upgrade its internal order processing operations. "Prior to implementing InterWorld, our systems were manual, totally geared to shipping tractor-trailer loads of merchandise to stores," says Atwater. "Suddenly, we want to pick and pack individual merchandise to individual customers and to handle returns. We don't yet have a good fulfillment system and we don't yet have adequate customer services."

## Shop at Home

Having achieved significant success selling products through its television programs, Shop At Home Inc. in Nashville, Tenn., sought to broaden its markets through an online shopping site. It chose BroadVision to power its Web site at *www.collectibles.com.*

"We needed a system that would easily integrate with our current Oracle databases and our back-end CRM, fulfillment and financial systems," says Wayne Lambert, Shop At Home's executive vice president and CIO. "We looked at Vignette and others but decided on BroadVision."

But the process, which began in June last year, wasn't easy. "We launched the site in November 1999. We worked at Web speed to implement the system and we experienced a lot of initial frustration," Lambert says.

In time, the problems were resolved and the company gives high marks to BroadVision. "They're extremely responsive to all of our needs," says Bob Miller, Shop At Home's vice president of enterprise technology. "If we have performance issues they will have a senior engineer on-site within a day."

As a result of implementing BroadVision to develop Collectibles.com, Shop At Home has increased revenue. "Ninety-five percent of our Web site visitors are new customers. We have no physical presence, so it's easy to determine how much is incremental business," Miller says.

The site initially had 2,000 unique visitors per day; by mid-July that figure had climbed to 15,000. It recently celebrated its first $1 million-sales month.

## Powering the Site

Rockwell Automation, a division of Rockwell International Corp. in Greenville, S.C., makes mechanical transmission products and motors. The company chose BroadVision to power its business-to-business site because of "its superior online order management and customer relationship management," says Don Louis, director of e-commerce. "It makes it easier and more convenient for our customers to do business with us."

JOHN SOARES

"We implemented e-commerce to bring our existing Web site into the 21st century. . . . Previously, HTML programmers did most of the site maintenance."

GINGER ATWATER, WEB MANAGER, BURLINGTON COAT FACTORY, INTERWORLD USER

"We know it's the future for us. I truly think that anyone who's not in this game will be left behind."

GLEN PIRIE, CHIEF OPERATING OFFICER, SWANSON HEALTH PRODUCTS, COMMERCIALWARE USER

to

are

Rockwell looked at other vendors, including Netscape Communications Corp. "We looked for scalability and one-to-one marketing capabilities," says Louis. "BroadVision had a proven track record with large companies."

Launched last April, the site is averaging about 1,150 log-ins daily and has earned $10 million for Rockwell. "However, we can't attribute this increase in business solely to the launch of our Web site," says Louis. "That would completely discount the efforts of our salespeople, marketing staff and engineers."

## Slow Starts, Fast Finishes

Livemind Inc., a San Francisco-based wireless e-commerce enabler, provides business-to-business solutions for Web merchants looking to extend their e-commerce model to consumers using wireless devices. Livemind needed to rapidly implement Intershop software to power its Web site at *www.livemind.com*, but experienced a few problems along the way.

"Since [Intershop's] Enfinity was a new product when we started using it, they lacked experienced support," says Iaian Scholnick, Livemind's chief technology officer. "We ran into a few bugs. It probably took a month to get to the point where we were comfortable and using it effectively and doing customized development. Once we got over that initial hump, the product has been pretty easy to use."

Scholnick says he considered other applications, including IBM and Microsoft Corp. products, but chose San Francisco-based Intershop because of the strong XML and Wireless Markup Language (WML) support, the drag-and-drop user interface for constructing business logic and the scalability of the product.

"The XML/WML support, intuitive process modeling and the open architecture of Enfinity has helped us considerably decrease time-to-market for the delivery of the Livemind wireless commerce management platform," Scholnick says.

## Our Gift to You

Camdens Inc. in White Plains, N.Y., chose Intershop software to help it "quickly support and expand our e-commerce strategy and help Camdens obtain a competitive advantage," according to Antonio Yenidjeian, vice president and CTO at the online business gift company.

His experience parallels that of Livemind. Camdens' specialized requirements made the implementation process complex. "Intershop is easy to implement once you're up to speed and trained. We recommend taking the entire Intershop Enfinity training program first," says Yenidjeian.

Yenidjeian says you can have out-of-the-box e-commerce functionality in eight weeks. The only real problem his company had was in getting "rapid" answers from Intershop on hardware capacity/performance planning recommendations "because I think it's not all pulled together yet," he says.

Camdens considered other companies, including BroadVision, Blue Martini Software, Open Market Inc. and Allaire Corp. The company selected Intershop because of the software's multiple-server configuration and support for a wide variety of standards, including Java and XML. According to Yenidjeian, Camdens is especially pleased with the ongoing service from Intershop and the company's willingness to hear suggestions and opinions.

Yenidjeian says the most important benefit of Intershop is its total cost of ownership and cost of implementation, which increases his company's revenue by "lowering the burn rate." Yenidjeian says he would like to see Intershop extend the order/inventory fulfillment logic with added features.

## It's About Trust

Regardless of whatever research you conduct to help select an e-commerce engine and regardless of anything you may discover about your competitors' experiences building their sites, your project's success ultimately depends on the quality of the relationship between your company and your application vendor. It's also important to have the right people working together — people who trust one another, says Ritz Camera's Brysha. The software is important, but it's the integration of the implementation team — all the people who will make it work in your own infrastructure — that is the most critical part of the process, he says.

The site owners we interviewed all wanted to focus their energy on building their sites; they didn't want to worry about the tools, scalable infrastructure, secure transaction support, compliance with Internet and industry standards and more. That level of technical expertise exceeds the grasp of most retailers, even those with an IT department. That's why they sought top vendors. Still, to varying degrees, they all experienced problems during the implementation. That's understandable when integrating multitiered software into an existing transactional environment in Internet time. So when obstacles surfaced, the site owners had to wait while the application providers developed new code and patches to get their projects back on schedule. And then, after opening day, they would seek permanent fixes and plan for endless upgrades. They all seemed comfortable with that reality.

Shop At Home's Lambert advises enterprise-class site owners to understand that they will never achieve closure. With a Web site you're never finished, he says. The market constantly evolves, the technology constantly changes. It's a journey, not a destination, he adds. ◗

*Millman is a consultant in Croton, N.Y. Contact him at hmillman@ibm.net.*

## Who's in Charge Here?

While interviewing site owners for this story, I sometimes felt that some of these folks were reading from a vendor's press release. No matter how deeply I probed, very few reported any significantly unpleasant experiences. Could the products and the application vendors really be so wonderful as to warrant the deferential way the users described the product?

Then I realized the site owners weren't so much describing the attributes of the vendors' products, but the qualities of their relationships with the vendors. And their attitude of deference had an oddly familiar feel.

Many years ago, my father suffered a series of heart attacks. He was an independent and strong-willed man – not unlike the executives I talked to for this story – but he spoke to the doctors with a reverence bordering on awe. I realized that the cause was his perception that the doctors had the power of life and death over him. And, to some degree, they did.

Fast-forward to the present. Looking beyond the words of the users I interviewed, I noticed a similar pattern governing the relationship between many of the site owners and their software vendors. Was this because the owners had committed hundreds of thousands or millions of dollars to the success of their Web sites and had given the vendors the power of economic life and death over the companies – and some careers?

With so much money changing hands and online development moving so quickly, they picked their words with caution as they described their experiences, careful not to compromise relationships with their vendors.

But for all the similarities, the pattern didn't totally parallel that of a patient entreating his doctor for salvation. The site owners weren't ailing, just needful of expertise.

Occasionally they hinted at the considerable impatience they felt with delays, bugs and missed deadlines. While it was clear that the vendors controlled the visible portion of the relationship, the site owners would tolerate this situation as long as the vendors had their finger on the pulse of the site and kept it beating strong.

*– Howard Millman*

With a Web order, we never have to handle a phone call. Everything's integrated so it's essentially a no-brainer to us.

DEAN PLANTZ, DIRECTOR OF MIS IMPLEMENTATION, SWANSON HEALTH PRODUCTS, COMMERCIALWARE USER

Ninety-five percent of our Web site visitors are new customers.

BOB MILLER, VICE PRESIDENT OF ENTERPRISE TECHNOLOGY, SHOP AT HOME

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# Vendor Automates E-Commerce Sites

*Start-up Loudcloud wants to change how successful Web sites are built*

BY TODD R. WEISS

WHEN SKILLSVillage Inc. and QuinStreet Inc. went looking for vendors to provide the hardware and software infrastructures for their e-commerce businesses, their missions were similar.

They sought someone to keep all the servers working and to watch over the growing network demands of their businesses, leaving the firms free to do the work they do best: building innovative Web site applications and transaction capabilities for their clients.

Both selected Loudcloud Inc. in Sunnyvale, Calif., to expand their Web capabilities.

Loudcloud is the creation of Netscape Communications Corp. co-founder Marc Andreessen, who joined several partners last September to form a start-up that automates the creation of Internet infrastructure systems and mass produces them.

By developing standardized systems that can be easily scaled to fit a client's needs, Loudcloud says, it can build the infrastructure from the ground up in just eight weeks and get that infrastructure working on the Web.

It's still up to the customers to code the business logic for their sites, design their sites' user interfaces and perform testing. The production code is then deployed on Loudcloud's hardware and monitored by Loudcloud.

What makes it unique in a crowded field, says CEO and co-founder Ben Horowitz, is the firm's customized software, called Opsware. The software automates what are typically manual tasks, including capacity scaling and system configuration, which Horowitz says allows Loudcloud to size, configure and set up a complex e-commerce network in a flexible, custom-designed and scalable package. Loudcloud offers its services under the name Smart Clouds, which includes Web Cloud for Web hosting and Database Cloud for database hosting.

If the company can't maintain 100% uptime "outside of normal maintenance periods," Loudcloud will issue the customer a credit, according to a company spokesman.

Tim Howes, chief technology officer at LoudCloud, says that Opsware covers everything from backup recovery to capacity planning and system performance analysis. But he refuses to state how Opsware actually works.

Howes also declined to discuss the start-up's revenue, earnings or profitability, but it has no shortage of capital. It has raised more than $188 million to date.

Aida Scott, CTO and vice president of engineering at Redwood City, Calif.-based QuinStreet, says Loudcloud's attention to detail, means his company can focus on its core business while Loudcloud keeps the systems flowing behind the scenes.

QuinStreet, which builds online storefronts for specialty companies, signed on with Loudcloud in March.

Loudcloud charges a monthly subscription fee based on the number of services used. "They are not the cheapest game in town," Scott says of Loudcloud. "But they are the most full-service game in town."

One problem Scott says he has seen, however, is that the constant shortage of qualified IT workers has affected Loudcloud's ability to provide his company with the close attention he would like.

"Not having these people lined up, we've been in a kind of fire-drill mode" when problems have arisen, Scott says. He has his own people and backup systems on standby.

"It puts me into a predicament that I have to build additional redundancies, rather than taking their word for it," he says.

QuinStreet pays a monthly fee in the low six figures, Scott says, but it's still cheaper than if the company had spent $5 million for new equipment while it was trying to grow its business.

Chris Wong, CEO of SkillsVillage in Santa Clara, Calif., says using Loudcloud has allowed his company to "sell like mad" while leaving the worries of operations in the hands of a reliable vendor.

SkillsVillage, which sells its customers hosted applications and services, has been paying Loudcloud a monthly fee in the high five figures since hiring the company in January, Wong says.

Among the benefits, he says, are around-the-clock support, system redundancy and immediate addition of more equipment as his business needs expand.

Wong says his only concern is whether Loudcloud can grow its staff to keep up with the increases in his business. "If I sign up AT&T or another [major company], they need to be there for us," he says.

JOHN HARDING

**LOUDCLOUD CEO Ben Horowitz (left) and CTO Tim Howes say Opsware automation software gets Web sites online faster**

## Loudcloud Inc.

**Location:** 599 N. Mathilda Ave., Sunnyvale, Calif. 94086

**Telephone:** (408) 744-7300

**Web:** *www.loudcloud.com*

**Niche:** E-commerce Web site infrastructure automation and operational support services

**Why it's worth watching:** The company's Opsware allows faster site deployment and helps maintain a robust Web site back end.

**Company officers:**
- Marc Andreessen, chairman and co-founder
- Ben Horowitz, CEO and co-founder
- Tim Howes, chief technology officer and co-founder
- In Sik Rhee, vice president of research and co-founder

**Milestones:**
- September 1999: Incorporated
- February 2000: Launched
- June 2000: Formed alliance with Microsoft Corp.
- June 2000: Third round of equity funding totaled $120 million.

**Burn money:** More than $188 million from Capital Research and Management Inc., Amerindo Investment Advisors Inc. and others

**Employees:** Approximately 250

**Services/pricing:** Smart Cloud services. Monthly fees range from five to six figures or more.

**Customers:** SkillsVillage, QuinStreet, Acteva Inc. and others

**Partners:** Microsoft, Sun Microsystems Inc., Exodus Communications Inc. and others

**Red flags for IT:**
- Consolidation is beginning to occur within this market niche.
- Service providers must be able to grow at the same rate as their clients.

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STATE OF THE MARKET

## Setting Sites

Loudcloud is a pioneer in a growing market: automatically generating the infrastructure to run a Web site.

But analysts warn that Loudcloud will face increasing competition as bigger players enter the market and that it will also face the high costs of upgrading its technology to keep up with customer needs.

Competition is increasing, however, with major vendors such as IBM and Electronic Data Systems Corp. "starting to take a turn in this direction," says David Tapper, an analyst at International Data Corp. in Framingham, Mass. "[While] it's a logical need in the market . . . the bad news [is that] it is capital-intensive up front to get running," says analyst Corey Ferengul at Meta Group Inc. in Bartlett, Ill. And as technologies change, service providers such as Loudcloud must invest in more modern equipment and the staff to run it.

Among Loudcloud's strengths, though, is the high-profile leadership of Marc Andreessen and the company's positioning at the forefront of a relatively new field, Ferengul says.

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# There's No Place Like Home

**Working in another country may sound like a clever excuse for an extended paid vacation, but don't pack yet. Finding an international IT position is hard, and adapting to a foreign culture can be even harder. By Erik Sherman**

IF YOU HAVE ALWAYS dreamed of combining work and travel in an overseas assignment, you may be in for a rude awakening.

It's rare for U.S. information technology professionals to get offers abroad. "There is an abundant supply of IT people" in other countries, says Neil Franklin, CEO of Dataworkforce Ltd., a London provider of freelance help to the telecommunications industry.

It can also take months to get a working visa, making the hiring process too long for most employers.

And comparatively low pay usually discourages IT workers. "Nobody pays more than U.S. companies," says Maria Schafer, program director in executive services for human capital management at Meta Group Inc. in Stamford, Conn. U.S. positions pay 20% to 50% higher than those in Europe and "exponentially higher" than those in most other parts of the world.

"If you're a U.S. citizen, why would you go [abroad] to get a two-thirds cut in pay?" asks Jeff Hawn, director of client development at the Columbus, Ohio, office of Management Recruiters International.

Still, there are some exceptions to these experiences. Some foreign companies hire senior IT managers for their expertise. Large U.S. consulting firms sometimes send employees to overseas engagements. If you're interested in the latter, experts suggest finding a company with an international presence. Such corporations often send people to start new offices or to bring a specific type of expertise to an established branch.

"It tends to be the top Fortune 1,000 companies," says Anita Komlos, national director for business development at the Beverly Hills, Calif., office of Princeton, N.J.-based Berlitz International Inc. And the number of Silicon Valley firms planning to relocate employees has shown "an enormous increase," she says.

## Adjustments

Even when they succeed in overseas jobs, IT professionals can find international assignments to be stressful. Komlos says 12% of expatriates quit. Top reasons: either they or their families are uncomfortable in the new culture.

Relocations are also expensive. A company's average cost for sending a family of four on a three-year assignment is $1.3 million — and any resulting financial loss can damage the employee's career.

Intense language instruction and cross-cultural orientation can help people cope. But even if such training is provided, Komlos says it also helps to have the U.S. citizens undergo a community orientation, so they know where to find basic services and food.

With the stress, though, can come rewards.

"There's more autonomy, more independence, less need to deal with the politics of a regular corporate environment," says Barry Kozloff, president of Selection Research International Inc., a St. Louis company that tests employees for suitability to international positions.

Keith Kratville, who works at Terasys Inc., a Chicago IT consulting and training firm, is on a two-month stint in Australia.

"I did see it as an opportunity to promote a lot of the things I wanted to do, [like] project management," says Kratville, who went to Sydney to set up a new training course.

He says some difficulties, like being alone because his family remained in the U.S., were to be expected. Others were harder to predict. For example, many Australian residences lack central heating, he says.

"I have a space heater that I carry around from room to room like a security blanket," says Kratville. Overall, he says he can bear up under the stress because his assignment is short. But he does have some advice for those taking foreign assignments: "Call ahead and find out what the weather's like," he says with a laugh. ◗

*Sherman is a freelance writer in Marshfield, Mass.*

## Are You Ready?

Many factors can make an overseas assignment a terrible experience. Barry Kozloff, president of Selection Research International, tells a story of a senior IT person working in eastern Europe. The worker's wife needed care for a medical condition, his children had special education needs and he "had a lack of emotional maturity, poor interpersonal skills," says Kozloff. "It was a recipe for failure." The employee and his family were brought back early.

Kozloff strongly suggests that, before taking positions in foreign countries, people do some soul searching and ask the following questions:

**1.** Why am I going and what do I want from an assignment? The answers could include a desire for career advancement, travel or adventure.

**2.** What will I be giving up in the form of ties to people, places and career possibilities?

**3.** Will I really gain professionally from working overseas? What will I lose?

**4.** Will I gain anything financially, or will missed career possibilities and expenses like storage end up costing me money? – *Erik Sherman*

Business Analysts: Positions available in our New York, New York City, Chicago, San Jose, San Francisco and Nashville area offices. Will work as team leaders with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will apply OO analysis and design methodologies and object modeling techniques to design OO applications. Will be responsible for working with users to define system requirements. Will translate those requirements into clear and precise specifications for the developers to implements. Will design screens, write use cases, design and perform system testing. Requirements: Master's degree in Business, Computer Information Systems or related field, or equivalent. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

Senior Software Engineer: Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience using SAP. Masters degree in Computer Science/Applications, Engineering, Chemistry, Math, Physics or a business related field. Will accept Bachelors degree, or foreign equivalent, with five years of progressive experience as computer professional. Salary is $100,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Thomas C. Dembosky, Manager, Indiana Job Center, 350 North Fourth Street, Indiana, PA. 15701. Job Order No.: WEB 113814.

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Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in ColdFusion, Visual Basic and SOL Server. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and one year of experience as a software engineer or computer programmer, knowledge of ColdFusion, Visual Basic and SOL Server. Salary: $66,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Terry Faust, Waynesburg UC Office, 653 East High Street, Waynesburg, PA 15370-1781, Job No. WEB116347.

Database/Network Administrator to design, develop, implement & test networks, network administration, install & maintain local and wide area networks using TCP/IP, IPX/SPX, NetBEUI, Visual C++, Ingress, MS-SOL & Visual Basic on UNIX, Windows NT & Netware; conduct system & unit testing; implement s/ware & provide support with documentation & modify s/ware; Reqs. Bachelor's in Comp. Sci., Comp. Info. Systems, Electrical or Electronics Engg., Math or its foreign educ equiv plus 2 yrs exp in the job offered; $59,775/yr, 40 hrs/wk, OT as req'd, 8:30a-5:00p. Send resume to Gwinnett, J.O. #GA6536515, 1535 Atkins Rdl, Lawrenceville, GA 30043-5601 or the nearest Dept. of Labor Field Service Office.

Linear Software Solutions, Inc. urgently needs IT Professionals with a min. 2 yrs. industry experience in MS-C, C++, PL/M, FBA Navigator, Paradox, WinNT Internals, Image Server, ATL-COM, ISAM, CTOS-Open, Unisys Micros system, COM, Discoverer 2000, SOL Server. Travel reqd. Will work at unanticipated locations in the US. Send resume & salary reqmnts. to 41 Vreeland Avenue, Ste. 23, Totowa, NJ 07512.

Consultant needed for software development and consulting firm located in Oak Brook, Illinois. Job duties include: Analyze, design, develop, test, and document computer software applications. Identify, evaluate, and define user requirements. Write Stored Procedures and SOL scripts. Use UNIX, PL/SOL, Oracle, MS Access, SOL*NET, and Novell Netware. Applicant must have M.S. degree in Computer Science, Engineering or Mathematics. Applicant must also have 2 yrs. exp. in the job duties listed above or in any computer related occupation which includes 2 yrs. designing and developing computer applications with Oracle, PL/SOL, and Novell Netware. 40hrs/wk, 8am - 5pm, M-F, $65,000/yr. Send 2 copies of both resume and cover letter (no calls) to: Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, Illinois 60605, Attn: Shella Lindsey, REF# V-IL 23543-L. Must have proof of legal authority to work permanently in the U.S. AN EMPLOYER PAID AD.

Permanent openings for Programmer Analysts, Software Engineers, Product Development Managers and related computer professional positions in Atlanta, GA to: design, develop, configure, install and test browser-enabled HR modules for SAP business process software applications in R/3 client/server environment using ABAP object oriented programming language and design principles and applying database tools such as Oracle, DB2, SOL and Informix and internet technologies such as JAVA, HTML and others in WindowsNT, Solaris and UNIX operating systems. B.S. degree or foreign equivalent in Com Sci, Eng, Math, Accounting, Bus. Admin. or related field. Master's and prior experience required for some positions. Competitive salary/ bonus/benefits offered. Send resume with **Job Order #100** to career.us@arinso.com.

Systems Developer (Oracle) - (multiple openings) for analysis, custom design & development of Oracle applications financial & manufacturing software modules; support company's applications ensuring that the system & its functionality are properly serving user community; & use Oracle, Developer 2000, Oracle Forms & Oracle Reports; Reqs. Bachelor's in Comp. Sci., Systems Analysis, Computer Info. Systems, Mgmt. Info. Systems, Comp. Engg., Electrical or Electronic Engg. or Math or its foreign educ equiv plus 1 yr exp in the job offered or 1 yr related exp as Programmer, Programmer Analyst, Systems Analyst, Systems Developer (Oracle), Applications, Consultant, Lecturer, Sr. S/ware Engr., S/ware Engr. or Consultant; $68,000/yr, 40 hrs/wk, 8a-5p. Send 2 resumes to Case #20002080, Labor Exchange Office, 19 Staniford St, 1st Fl., Boston, MA 02114

Programmer Analyst. Develop and design technical modules to support business requirements around conversion, interface and modification of business software. Write programs, conduct unit, system and integration testing. Work with event driven programming techniques such as Visual Basic, C++ and PeopleCode. Work with database RDBMS concepts using Oracle on Unix and Windows NT environment. Demonstrated ability developing applications using C, C++, Visual Basic. Demonstrated ability working with Oracle RDBMS and Designer 2000. Demonstrated ability working with Unix and Windows NT environments. $76,253/yr. 40 hr/wk. 9am - 5pm. Must have 1 yr. exp. (or 1 yr. exp. in related occupation of Systems Analyst) and M.S. in Comp. Sci., Eng., rel. field/equiv. Send 2 resumes to: Case #19992555, Labor Exchange Office, 19 Staniford Street, 1st Fl., Boston, MA 02114.

Senior Software Engineer (Multiple openings): Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience using: 1 of Group A and 1 of Group B and 1 of Group C; OR 1 of A and 2 of B; OR 1 of A and 2 of C as follows: Group A @ Windows 3.1, Windows NT, Windows 95, Windows 98, Unix, HP-UX, IRIX, Sun OS; Group B - Visual C++, Visual C, C, C++, Visual Basic, PowerBuilder; Group C @ JAVA, TCP/IP, HTML, MFC, CGI, PERL, ASP, COM/DCOM, Active X, MTS. Master's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics. Will accept Bachelor's degree with five years of progressive experience as computer professional. Salary is $75,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Ms. Barbara Cole, Supervisor, Greene County Team PA CareerLink, 4 West High Street, Waynesburg, PA 15370-1324: Job Order No.: WEB 113840.

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Senior Software Engineer, Atlanta: Design, develop, test, debug, maintain and document automation of quotation management systems with interactions to product configurations systems; perform third party integration with quotation management systems; design and develop web-based application systems and reusable components as they pertain to product configuration systems; use languages and tools such as VC ++/ATL, Delphi, ASP/IIS, XML, COM/DCOM, Active X, JavaScripts, VB, HTML, SOL, SOL Server, Oracle, Access. Requ's: Masters Degree in Computer Science. In lieu thereof, employer will accept Bachelors (or equivalent) in Computer Science, plus 5 yrs. progressive experience as Software Engineer. Email resume to lmills@primus.com or mail to Ms. L. Mills, Primus Knowledge Solutions, Inc, 1601 5th Avenue, Ste 1900, Seattle, WA 98101.

Chief System Architect responsible for software and architecture development for transaction- and client-specific multimedia and Internet applications. You will determine software specifications, design and develop customized software packages, perform post-sales technical support, and undertake research and development of new software modules. Requires a bachelor's degree in computer science and experience in a software engineering or development position. Send resume to Uri Zernik, Technical Manager, OpenSource, Inc.,1047 El Camino Real, Suite 204, Menlo Park, CA 94025. An EOE.

Programmer Analyst needed for computer software development and consulting firm locAted in Duluth, Georgia. Job duties include: Analyze, design, develop, test and implement computer software applications. Consulting on various in-house projects and/or contract basis throughout the United States. Use COBOL II, MVS/JCL, DB2, IMS, VSAM databases, VS/CICS, InterTest, Xpeditor, Job-Scheduler, and FILE-Aid on IBM mainframe in MVS/XA/ESAA environment. Applicant must have B.S. degree in Computer Science, Engineering, or Business. Applicant must also have 1 yr. exp. in the job duties listed above or in any computer related occupation which includes designing and developing computer applications using COBOL II, and DB2 on IBM mainframe. 40hrs/wk., 8am-5pm, M-F, $59,775/yr. Apply in person or send 2 resumes to: Georgia Department of Labor, Gwinnett, Job Order #GA 6537048, 1535 Atkinson Road, Lawrenceville, GA 30043-5601 or the nearest Department of Labor Field Service Office.

Applications/System Architects: Positions available in our New York, New York City, Chicago, San Jose, San Francisco and Nashville area offices. Will work with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will design, develop and implement enterprise wide, distributed applications in various OO, client/server, n-tier environments against various relational databases. Will utilize OO languages, including Forte and Java and relational databases such as Informix, Oracle, Sybase, MS SOL Server, and DB2. Will lead development teams. Requirements: Bachelor's degree in Computer Science, Computer Engineering or Electrical Engineering or equivalent, plus five years of experience, which must include experience in programming with an object-oriented programming language; or Master of Science degree in Computer Science, Computer Engineering or Electrical Engineering, or equivalent. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

Senior Software Engineer (Multiple Openings): Design, develop and implement computer software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience using: 1 of Group A and 1 of Group B and 1 of Group C; OR 2 of A and 1 of B; OR 2 of A and 1 of C as follows: Group A - DB2, IBM3090, IBM ES9000, MVS, IMS, IDMS; Group B - CL/400, CICS, TSO, VSAM; Group C - TELON, COBOL, JCL, AS/400, RPG/400, COBOL/400. Masters's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics. Will accept Bachelor's with 5 years of progressive experience as a computer professional. Salary is $75,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Ms. Sue Notarnicola, Supervisor, Fayette County Team PA CareerLink, 32 Iowa Street, Uniontown, PA 15401-3513. Reference Job Order No.: WEB 113837.

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Provide system and analytical support for computer applications, systems, and related procedures to process data; analyze requirements for complex systems to determine data processing applicability; design, analyze and implement client/server application using Powerbuilder & Visual Basic; design, code, test, and debug system specifications.

Bachelor's degree in Engineering or Computer Science required. 2 years experience in the position or 2 years as Programmer Analyst &/or Systems Analyst required. Experience in related occupation must include design and analysis of client/server applications utilizing Powerbuilder and Visual Basic.

40 hrs/wk; 8:00am – 5:00pm; $64,250/year. Must have proof of legal authority to work permanently in the US.

Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street – 7 North, Chicago, Illinois 60605. Attention: Leonard Boska, Reference# V-IL-23261-B. NO CALLS. AN EMPLOYER PAID AD. EOE.

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Perform broad analysis of business & scientific systems & prepare detailed specifications based on user req. Design, develop, test & implement software apps by using Oracle, C/C++, SOL & Object Oriented Analyses & design in multiple environs. Determine solutions including necessary modifications of sys, & changes in processing methods. Revise & update programs as required & provide necessary documentation to maintain client programs. Req. MS in Comp. Sci, Engg (any type) or Info Sys. $57.5K/yr. 40 hr/wk. Apply in person or 2 resumes to: South Metro, Job Order # GA 6538419, 2636-14 Martin Luther King Jr. Dr., Atlanta GA 30311, or nearest Dept. of Labor Field Serv. Office. EOE.

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Analyze, design & develop client/server & web-based applications for telecommunications network maintenance using Visual Basic, Java, Visual C++, Active X & AutoCAD technologies. Develop communications software & support Web-based client/server GUI database apps. Develop repository of equipment info to provide graphical picture of telecommunications structure. Req: MS in comp. sci, info tech, or eng. $53.1K/yr. 40 hr/wk. Apply in person or 2 resume to: South Metro, Job Order # GA 6538435, 2636-14 Martin Luther King Jr., Dr., Atlanta GA 30311, or nearest Dept. of Labor Field Serv. Office. EOE.

Senior Software Engineers (multiple openings): Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation using relational data base management systems (RDBMS). Work involves extensive travel and frequent relocation. Must have 1 year of experience using 1 from Group A and 2 from Group B OR 1 from A and 1 from B and 1 from C OR 1 from A and 2 from C. A) DB2, FoxPro, Informix, Ingres, MS-Access, Oracle, Paradox, Sybase and Unify; B) AIX, DOS, HP-UX, MVS, Novell, OS/2, Sun OS, UNIX, VAX/VMS, Windows; C) 4GL, APT, C, C++, COBOL, Case Tools, C Shell, Crystal Reports, E-SOL, Easytrieve, JAVA, ODBC, PowerBuilder, PowerDesigner, Power J, Power++, S-Designer, SOL, Shell Script, Visual Basic. Master's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math, Physics or a scientific or business related field. Will accept Bachelor's degree with five years of progressive experience as computer professional. Salary is $75,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. James J. Mackin, Manager, Beaver Falls Job Center/TPCL, 2103 Ninth Avenue, Beaver Falls, PA 15010-3957. Job Order No.: WEB 113826.

Computer Technology Associates, Inc. is looking for a Programmer/Analyst to plan, conduct, and coordinate the development of complex and diverse computer programs and associated documentation using block diagrams, logic flow charts and coding. Provide technical advice/consultation on programming applications to users. Participate in developing programming and documentation standards. Evaluate user request for new or modified program to determine feasibility, cost and time required for projects, compatibility with current system, and computer capabilities. Coordinate with computer operations staff to resolve program malfunctions in operational runs. Enter commands into computer to run and test program. Define test schedules and test data requirements to verify logic of new/modified programs. Replace/delete/modify codes, review instructions, or alter sequence of operations to correct errors. Analyze, improve and alter existing programs to increase operating efficiency or adapt to new requirements. May provide work leadership to lower level employees. Take direction from the Project Manager.

Applicant must possess a BS or BA in Computer Science, Engineering or Electronics plus 2 yrs. experience in job offered or 2 yrs. of business programming exp. 40 hours per week, salary is $50,000 per year. Please apply in person to any local Kansas Job Service Career Center or send a job resume to: KS Department of Human Resources, #KS2300110, Attention: Jane Burbridge, 401 SW Topeka Blvd., Topeka, Kansas 66603-3182. Applicants must have proof of legal authority to work in the United States.

**PROGRAMMER/ANALYST**; Analyze, study and evaluate existing legacy systems and in conjunction will determine client's product requirements. Will design and develop software applications as per client requirements and budgetary constraints. Will document process flow, prepare program specifications, and develop coding logic. Use tools such as charts and diagrams to assist in problem analysis and submit recommendations for solutions. Will plan projects, using appropriate technical planning tools. Responsible for encoding, testing, debugging and installing operating programs and procedures in conjunction with user requirements. Will perform product demonstrations and train end users. Will design and implement multiple domain networks (WAN) and install and implement software on the network. Minimum requirements include a Bachelor's Degree or equiv in Engg/CS/Sci/Elect and 2 years of related experience. Experience must include: two years of system design specifications, the design and implementation of two wide area networks and implement and support at least one EDI installation. Full-time position (40/wk, 8:30am-5:30pm). Salary: $49,774.40/yr, Overtime: n/a. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Center, 215 Keosauqua Way, Des Moines, Iowa 50309-1727. Please refer to Job Order IA110107. Employer paid advertisement.

Engineer, Software-- Sr. Member Tech. Staff – For a multinational software consulting co, responsible for a re-engineering project. Incl. identifying requir. for Software Appl.; working closely w/implementation team to make sure requirements are met as documented & assisting with software design; planning & directing activities of a team of 2-3 Software Engin. & building & executing a comprehensive Test Plan. Req: M.S. in Comp Sci, Math, Engin, Physics or a related field;2 yrs exp. in job offered or as Software Developer with mngt. exp. Exp. must incl. converting INFOS-based legacy appl. to Relational database appl. by developing CASE tools to achieve these conversions; enhancing software tools used for automating these conversions; installing converted software applications @ customer site & providing support to users after installations; web developing languages such as html, CGI. Proficient in C/C++, Java, Fortran, Visual Basic, Perl, Shell Script, SOL, MS Access, Oracle, HP-Unix, DG-Unix, IBM-AIX, MS-DOS, Windows 95/NT, Html, CGI. 40hrs/wk. M-F 9am-5pm, $66,959/yr. Send resume incl. SS# & to Job Service1105 Briggs Ave., Durham, NC 27703. Job order # NC3614417 & DOT code 030.062-010.

Sr. Software Engineer to be responsible for translating customer requirements into both system and software requirements; interpretation and implementation of customer change requests pertinent to radar systems products; design, development, test and documentation of real-time software for avionics radar systems products; support of the new radar; data collection to develop the enhanced turbulence detection algorithm. MS in Computer Science or Engineering; 8 yrs experience in job offered. Must have 5 years of avionics and radar system experience; 5 years of C, PLM and Assembler programming; 5 years of experience with communication protocols and software development standards; 5 years experience translating customer requirements into system and software requirements; 5 years of Intel and TI microprocessor experience; 5 years of hardware interfacing experience; 5 yrs of diagnostic software experience. All experience may be cumulative. 40 hours/wk, 7:30 a.m. to 4:30 p.m., $64,000/yr. Must have proof of legal authority to work in the United States. Send resume to the Iowa Workforce Center, 800 Seventh Street SE, Cedar Rapids, Iowa 52406-0729, Ref. #IA1101090. Employer Paid Ad.

Business Analysts: Positions available in our New York, New York City, Chicago, San Jose, San Francisco and Nashville area offices. Will work with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will apply OO analysis and design methodologies and object modeling techniques to design OO applications. Will be responsible for working with users to define system requirements. Will translate those requirements into clear and precise specifications for the developers to implements. Will design screens, write use cases, design and perform system testing. Requirements: Bachelor's degree in Business, Finance, Computer Information Systems or related field, or foreign equivalent. 2-3 years of business/ systems analysis experience preferred, which should include software selection, design and/or development, implementation and/or conversion experience. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

Software Developers: Positions available in our New York, New York City, Chicago, San Jose, San Francisco and Nashville area offices. Will work with exceptional teams of computer and business professionals participating in full life-cycle development of distributed, object-oriented applications. Will design, develop and implement enterprise wide, distributed applications in various OO, client/server, n-tier environments against various relational databases. Will utilize OO languages, including Forte and Java and relational databases such as Informix, Oracle, Sybase, MS SOL Server, and DB2. Requirements: Bachelor's degree in Computer Science, Computer Engineering or Electrical Engineering or foreign equivalent, plus five years of experience which must include programming in an object-oriented programming language; or Master's degree in Computer Science, Computer Engineering, Electrical engineering, or equivalent. If interested, please email your resume and cover letter to jobs@thoughtworks.com.

Senior Software Engineer (Multiple Openings): Design, develop and implement computer software systems using PeopleSoft and related software. Work requires extensive travel and frequent relocation. Must have 1 year of experience using PeopleSoft and related software. Master's degree in Computer Science/Applications, Engineering, Math, Physics, Chemistry or business related field. Will accept Bachelor's, or foreign equivalent, with 5 years of progressive experience as a computer professional. Salary is $100,000.00 per year, 9am @ 5 pm.. Send resumes, referencing Job Order WEB 113833, to Ms. Mary Pat Curran, Supervisor, McKeesport/Allegheny Co. CareerLink, 345 Fifth Avenue, McKeesport, PA 15132-2600.

Programmer/Analyst, Sr.-(over 50% of time in Phila. area; bal. elsewhere) Design, develop complex management & business oriented software applications & programs; provide advance level technical support services; provide senior troubleshooting services; use: Oracle, C++, Lotus. Master/Comp. Sci, Engg, Math or Business. 1yr/exp in job offered or 1yr as Prog/Analyst, Software Engr or Systems Exec. Will acc. Bachs deg plus 5yrs progressive work exp. in lieu of Masters deg. Must have knowledge of Oracle, C++, Lotus. Must be willing to travel as needed to client sites throughout USA. 40hrs/wk (9-6; M-F) $65,000/yr. Submit resume to: The Phila. Job Bank, 444 N. 3rd St.-3rd Fl., Phila, PA 19123. Refer to Job Order #2032347

SOFTWARE ENGINEER
Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in SQL Server, ASP and Visual Basic. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of SQL Server, ASP and Visual Basic. Salary: $124,800/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Ms. Sue Notarnicola, Fayette County Team PA CareerLink, 32 Iowa Street, Uniontown, PA 15401-3513, Job No. WEB116351.

Sr. Systems Analyst: function as Lead Developer to enhance/modify intelligent workstations across mult. Platforms to provide customer svce; design, develop modules & troubleshoot using Oracle 7 (or higher version), Windows NT & Tuxedo. Various unanticipated client sites thruout US. Req: Bach. Degree in Comp. Sci., Engg or Math, 2 yrs exp. in job offered (or 2yrs exp in the related occupation of systems analyst, prog/analyst or software engineer) & 6 mos. using Win NT. 40hrs/wk; M -F; 9am- 6pm; $90,000/yr. Apply at the Texas Workforce Commission, Dallas, Texas or send resume to Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas, 78701, JO # TX0944285. Ad paid by An Equal Opportunity Employer.

Database Administrator, MIS-University of La Verne: requires a 4-year degree in Information Systems or closely related discipline from an accredited college or university and a minimum of 2 years of related experience. Experience should include database administration (preferably Oracle) and UNIX systems administration (preferably Hewlett Packard). Knowledge of the SCT BANNER suite of software highly desired. See http://www.ulv.edu/hr/empopps.htm for full description EOE

**COMPUTER SENIOR ANALYST**

Tivoli Software Engineer to design, implement, and customize Tivoli Enterprise Management Software. Respond to Mike Doebler, Senior Advisor, Employment Services Group, Dynegy, Inc., 1000 Louisiana Street, Suite 5800, Houston TX 77002, FAX 713-767-5983. When sending your resume, please refer to Position ID: CW500TIV. Equal Opportunity Employer.

Immediate openings for experienced IT professionals in VC++, Rational Rose, SQL Server, ODBC, API, Unix SVR/4, C-Tree, Visual Parse++, etc. Travel req'd. Send resume & salary requirements to HR, Software Systems & Solutions, Inc., 1945 Cliff Valley Way, Suite 220, Atlanta, GA 30329.

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Anderson, South Carolina based manufacturer seeks SAP Programmers to assist in maintaining our SAP implementation. This position would entail working with functional personnel to develop enhancements, interfaces and reports for our live SAP instance. SAP modules would be FI, CO, PA, MM, WM, PP, SD, HR.
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Software Engineer (multiple openings): Design, develop and implement computer software systems using PeopleSoft and related software. Work requires extensive travel and frequent relocation. Must have 1 year of experience using PeopleSoft and related software. Bachelors degree in Computer Science/Applications, Engineering, Math, Physics, Chemistry or business related field. Salary is $85,000.00 per year, 9am – 5 pm. Send resumes, referencing Job Order WEB 113829, to Mr. Anthony Gebicki, Manager, Westmoreland County Career Link, 300 East Hillis Street, Youngwood, PA 15697-1808.

International Programming & Systems, Inc. has employment opportunities for DBA's, Systems Analysts, Engineers or Architects with any of the following skills: e-commerce, Java, Unix, VB, Oracle, C++, Mark IV, Teradata. Positions are available throughout the United States. IPS also has openings for Sales and Recruiting staff in our San Francisco, Los Angeles and Atlanta offices. Electronic responses are encouraged, to: cflavell@ispamerica.com or mail resume to IPS, 1875 So. Grant Street, #300, San Mateo, CA 94402 (Fax) 650-572-8679. Principals only please.

Sr. Programmer Analyst needed by Comp Systems & S/ware Consulting Services Co. in Decatur, AL. Must have 5 yrs. exp. dsgng & dvlpg info into mgmt systems & C/S tech. in C, PL/SQL, PRO*C, PASCAL, FORTRAN, HTML; maintaining C/S envrmt in UNIX, MS-DOS, Win 95, Designer/2000, Developer/2000 & d/bases in Oracle 7.x/6.0/5.0; and dvlpg, maintaining & enhancing by using Oracle Forms 5.0/4.5, Reports 3.0/2.5, Procedure Builder, Sql*Loader, SQL*Forms 3.0/2.3, Report Writer 1.1 Bach in Comp Engg or Comp Science req'd. Respond to: HR Dept, Dats Consulting, Inc. 2426 Danville Rd, Ste P, Decatur, AL 35603.

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IO Financial Systems, Inc, a NY IT Co is looking to fill the following positions at their work sites in NY:

Programmer Analyst/Software Engineer-Bach deg in engg, technology, sci & 5 yrs exp in job. Will accept Masters deg & 3 yrs exp in field. Prefer exp in the following skill sets: Fortran, CMS, Win NT, Cobol, IBM/MVS.

Software Engineer/Programmer Analyst-Master deg in engg, math, sci & 1 yr exp. Analyze, dsgn, dvlp applic systms. Prefer skill combo in Oracle, PL SQL, JAVA, Fortran, COBOL, C.

Send resumes to HR, IO Financial Systems, Inc, 2 World Trade Ctr, Ste 8300, NY, NY 10048.

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Unique Comp Inc, a NY IT Co is looking to fill the following positions at their work sites in NY:

Programmer Analyst/Software Engineer-Bach deg in engg (any), math, sci & 2 yrs exp in job (or) 5 yrs exp in job. Prefer exp in the following skill sets: Win NT, Novell Netware, CISCO, Dvlpr 2000, Oracle, SQL Server, MS Access, Crystal Reports, VB.

Software Engineer-Master deg & 1 yr exp. Analyze, dsgn, dvlp applic systms using skill combo in Win NT, Novell Netware, CISCO, Dvlpr 2000, Oracle, SOL Server, VB.

Send resumes to Unique Comp Inc, 27-08 42nd Rd, Long Island City, NY 11101.

Network Engineer wanted by IS/IT Consulting Services Co in Edison, NJ. Must have Masters or equiv in Comp Sci, Electronics or Electrical Engg & 2 yrs s/ware exp. Respond to: HR Dept, Netcom Systems, Inc., 200 Metroplex Dr, 3rd Fl, Edison, NJ 08817.

Senior Ouality Assurance Engineer: identify, create and implement project/test processes for quality assurance. Provide development and adoption of test plans within company test team plan. Design and execute system performance tests, both manual and automated. Develop and manage multiple communications including Release Notes, Bug discovery rates, and performance metrics. Support the creation of release management, build management and software maintenance methodology. Work with necessary web based automation solutions and actively develop test team. Requires: M.S. in Engineering or Technical field and 2 years Software Ouality Assurance experience. Demonstrated ability using WinRunner, QA Partner, and Visual SourceSafe, 40 hrs/wk (8 to 5); $75,000/yr. Send two resumes/response to Case# 20002106, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114.

Shiva Software Inc., a NJ IT Co., is looking to fill up the following positions at their work sites in NY & NJ:

Programmer Analyst/Software Engineer - Bachelors degree in engineering (any), math, science and two years of experience in the job (or) five years of experience in the job. Will accept Bachelors degree + five years experience in the field. Prefer the experience in the following skill sets: ORACLE, ODBC, Developer 2000, Visual Basic, CICS, UNIX.

Software Engineer - Masters degree and one year of experience. Analyze, design, develop application systems using skill combinations in Visual Basic, UNIX, CICS, ORACLE, Developer 2000.

Send resumes to Shiva Software Group, Inc, Human Resources, 1130 Route 46, Suite #8, Parsippany, NJ 07054.

Software Co, NJ requires prof'ls w/following skills for Sr/Jr positions:

SOL Server, D/base Admin & Dvlprs;

Oracle D/base Admin & Dvlprs;

Dvlprs in VBA, MS Office, Web Tech;

VB Dvlprs w/exp in Oracle, SOL & Web Technologies;

Java Dvlprs w/internet technology;

MS or equiv in educ & exp in Electronics/Comp Sci or in related field for Sr. positions & BS in Electronics/Comp Sci or related field + 2 yrs exp for Jr. positions. Competitive salary & benefits.

Send/fax resumes to STS Software, Raritan Plaza 1, Raritan Ctr, Edison, NJ 08818; fax: (732) 346-9195. Email: jobs@stssoftware.com

SYSTEMS ANALYST
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Analyze & evaluate existing or proposed sys. & revise computer programs, sys. & related procedures to process data using in-depth knowledge of software dvlpmt. life cycle. Encode, test, debug & install operating programs & other software systems. Design & dvlp. Human Resource software packages using ERP Peoplesoft skills & programming languages according to client rqmts. Bachelor's degree (or equivalent) in Comp. Sci., Math, Engrg., Business or Commerce plus 2 yrs. exp. in either job offered or as Programmer Analyst or Software Engr. rqd. Must be proficient in ERP Peoplesoft tools and PL/SOL or COBOL programming languages. High mobility preferred. 40 hrs/wk, 8 am – 5 pm, $78,000/yr. Qualified applicants report/submit resume to: Anthony Gebicki, Mgr., Westmoreland County CareerLink, 300 E. Hillis St., Youngwood, PA 15697-1808. Refer to Job Order No. WEB115568.

Programmer/Analyst. Plan, develop, test and document MS Windows applications utilizing C++, Visual C++ and ORACLE and financial and client/server applications in INFORMIX utilizing SOL and 4GL INFORMIX. Responsible for the analysis, development and testing of client/server applications using C++ for DOS and Unix platforms, Unix Shell and SOL. Responsible for evaluating customer requests for new and modified software programs. Consult with customers to identify current operating procedures and clarify program objectives, and then formulate and develop programs, using structured analysis and design. Convert project specifications into coding language. Requires: Bachelor's degree in Software Engineering or related field. 2 yrs. exp. in the job oftered or as a Software Analyst. Exp. which may have been obtained concurrently, must include 2 yrs. exp. planning, developing, testing and documenting MS Windows applications. 2 yrs. exp. utilizing ORACLE and financial and client/server applications in INFORMIX and 2 yrs. exp. utilizing SOL and 4GL INFORMIX. EOE. 40 hrs/wk. Salary: $60,000/yr. Send resume (no calls) to: Victor Klipinitser, A-Soft, Inc., P.O. Box 1270, Roswell, GA 30077.

Software Engineer (Manhattan) .Responsible for research, design, and development of software systems & client-server and web-based applications.Design, develop, implement & provide production support of software systems and applications utilizing Oracle 8 & 8i, Oracle PL/SOL, Java 2, Kiva Server, and C/C++. Responsible for system architecture, user requirements gathering, application user interface and database design. Requirements: B.S. degree (or foreign equivalent) in Computer Science, Computer Information Systems, Computer Applications, Engineering, Mathematics or Physics; 5 years in the position oftered or 5 years in a computer science position. Experience must be progressive and post-B.S. degree. M.S. degree will substitute for B.S. followed by 5 years of experience. At least one year of related experience must have included regular use of Oracle 8 & 8i, Oracle PL/SOL, Java 2, Kiva Server, C/C++. Salary: $87,OOO/yr. 35 + hrs/wk. Monday-Friday. Contact: Anna Romano, Associate Director, Human Resources, Standard & Poor's Rating Services (a division of the McGraw-Hill Companies) , 55 Water Street, New York, New York 10041.

Senior Systems Analyst (Manhattan) Responsible for overall development, testing and implementation of client-server based ratings applications modules. Interact with users to determine and translate user/business needs into technical specifications. Analyze, code, test & design software systems. Utilize Oracle, SOL, SOL*Plus, PL/SOL, C, NT, UNIX, Powerbuilder, and Pro*C. Requirements: Bachelor's degree in Computer Science, Information Systems, Engineering, Mathematics, or Physics, 2 years in the position oftered or 2 years as Senior Systems Engineer, at least one year of which must have included regular use of Oracle, SQL, SOL*Plus, PL/SOL, C, NT, UNIX, Powerbuilder, and Pro*C. Salary: $78,721/yr. 35+ hrs/wk. Monday-Friday. Contact: Anna Romano, Associate Director, Human Resources, Standard & Poor's Rating Services (a division of McGraw-Hill Companies), 55 Water Street, NewYork, New York 10041.

Senior Consultant: Design and develop client/server application in open environment including designing and developing GUI and databases, performance systems analysis, and developing, testing, installing and maintaining customized systems. Analysis, design, development and implementation of three-tier objected client/server communications systems. Analyze and design business processes through data modeling and process modeling. Requires: M.S. in Computer Science and 3 years experience in developing client/server systems. Knowledge of UNIX, Windows NT, C, Oracle, systems programming and GUI development. 40 hrs/wk (9 to 6); $78,500/yr. Send resume/response to Job Order #FL-2106893, Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, Florida 32302-0869.

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- VISUAL C++
- C/C++/UNIX
- MS/EXCEL • SOL SERVER
- WINDOWS NT
- JAVA/JAVA SCRIPTS
- UNIX • MS/ACCESS
- ORACLE PL/SOL
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- WEB DEVELOPERS

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IT professionals needed by NJ Firm:

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Various skills combinations required. Sybase, Powerbuilder, MS-SQL, Oracle, Visual C++, Windows NT, Java, etc. Apply with two copies of resume to H.R. Department, Glotech Solutions, Inc 3150 Brunswick Pike, Suite 160 Lawrenceville, NJ-08648.

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ArsDigita Corporation is a web-based enterprise software company. We build open-source software to support purposeful on-line communities for e-commerce, enterprise management, and education. We are building an international standard for developing sophisticated web services.

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- Director of Business Development
- Systems Administrator
- Culture Trainer
- Database Administrator
- Director of Solution Marketing
- Vice President of Engineering
- Vice President of Education & Training

The aforementioned positions are available at all levels and require a minimum of a Bachelor's Degree or Master's Degree and 0-5 years industry experience.

Also seeking a senior Human Resources professional at the Vice President level. Must have degree in a relevant field and 10 years experience.

Positions available at the following ArsDigita locations: Cambridge, MA; Berkeley, CA; Pasadena, CA; Palo Alto, CA; Atlanta, GA; Washington, D.C. Philadelphia, PA; Chicago, IL.

For all positions, send resumes to: Professional Staffing, ArsDigita Corporation, 80 Prospect Street, Cambridge, MA 02139 or e-mail at opportunities@arsdigita.com.

For more information, please visit our web site at www.arsdigita.com

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Programmer/Analyst - Develop, modify & convert applications running on mainframe environments (inc. CICS) to use on internet &/or PC-based systems. Use parsing technology (YACC++), database access systems (Microsoft SQL Server), internet & PC-based programming languages (inc. C, C++, Java and Microsoft ASP) & Operating systems to upgrade legacy applications (developed using SEER HPS, Cobol & EZtrieve) to run under modern systems (inc. Microsoft SQL Server & COM) while retaining the old application's integrity & functionality. Requirements: Masters deg. or equiv. in Comp. Sci., Eng., Math. or equiv. or Bach. Deg. or equiv. in Comp. Sci., Eng., Math. or rel'd field plus 2 yrs. exp. as Prgmmr., Sys. Analyst, Software Eng. or rel'd occup. Must also have 1 yr. exp. w/ SEER HPS; 1 yr. exp. w/ COBOL; 1 yr. exp. w/CICS envt.; 1 yr. exp. w/EZtrieve; 1 yr. exp. w/parsing tech. (using YACC++); 1 yr. exp. w/code generation techs. (using C++, Java & COBOL); 1 yr. exp. w/C, C++, Java, Microsoft ASP & COM; & 1 yr. exp. w/Microsoft SQL Server. Exp. w/spec. reqmts. gained through academic or trng. program acceptable. $64,000/yr, 40 hrs/wk. All resumes must include applicant's social sec. no. Job Order: NC5703372. DOT code: 030.162-014. Apply to nearest Job Service office or submit resume to: Job Service, 742-F East Chatham Street, Cary, NC 27511.

NetGuru Systems, Inc., the fastest growing Technology Company in the 1999 New England Fats-50, currently has multiple openings in each of the following positions:
Senior Software Engineer - Lead a development team in design, development, testing of Internet, database applications using one or more of the following: C/C++, VB, Java, Active Server Pages, or database administration of Informix, Sybase or Oracle: Requires Master's degree or Bachelor's degree + 5 years. experience.
Software Engineer - Design, develop internet applications, database applications using one or more of the following applications: Interdev, VB, HTML/DHTML, JAVA, JDBC, JDK, JavaScript, SQL, Windows NT, Unix, DOS, Data Moduling, Data Migration, Informix, Sybase, Oracle, Client/Server. Requires: Bachelor's or equivalent with 2 years experience.
QA Test Engineer - Perform automated or manual software testing and QA using any tool (Win Runner or QA Partner or SQA Robot). Requires Bachelor's or equivalent with 2 years experience.
Please forward resume to NetGuru Systems, Inc. Attn: HR-LC-CW, 240 Bear Hill Rd., Ste. 101, Waltham, MA 02451.

Software Engineer wanted by Computing & Web Consulting Services Co in Hoboken, NJ. Must have Masters or equiv in Comp Sci or related field & 2 yrs prgmg exp. Respond to: HR Dept, Global Computing Services Corp, 51 Newark St, Ste 507, Hoboken, NJ 07030.

Software Engineer - Design, develop and test computer software systems in conjunction with hardware product development; coordinate installation using Java and C. Req. B.S. in Comp. Sci., related or equivalent and 4 yrs. exp. Prevailing wage. Send resume to HR, Mosaic Software, 5540 NW 33rd Ave., Suite 100, Ft. Lauderdale, FL 33309.

Software Engineers (multiple positions) sought by New Jersey based Comp S/ware Consultancy Firm. Must have Bach or equiv in Comp Sci or Engg & 1 yr s/ware exp. Respond to: HR Dept, SysFour Solutions, LLC, 3530 Route 27, Suite 203, Kendall Park, NJ 08824.

Prog/Analysts w/BS + 3 yrs software development exp including 2 yrs w/C, C++, VB and/or Powerbuilder w/RDBMS. May have Masters + 2 yrs exp. Will develop all phases of software lifecyle. Must relocate to client sites. Contact HR at ESG, 9935 Timberstone Rd, Ste 200, Alpharetta, GA 30022.

Full time Sr. Programmer to develop, modify and maintain applications to be customized or standardized in Oracle Development. Implement new features and rework existing features or architecture. Assist in the analysis of client application software needs. Assist with the design and architecture of company's software products. Design and develop screen and report using developer/2000 tools. Must have four years of experience in the position or position with same duties. Salary $65,406/yr. Send resume to: Kimberly Donohue, DataScan Technologies, 1105 Sanctuary Parkway, Suite 190, Alpharetta, Ga 30004.

Programmer Analyst wanted by Securities Trading Firm in Jersey City. NJ. Must have BS & 2 yrs exp in Comp Sci or directly related field. Respond to: HR Dept, Knight Securities, Inc., 525 Washington Blvd, Jersey City, NJ 07310.

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Database Design Analyst wanted by Staffing Services Co in Melville, NY. Must have MS or equiv in Electronics/ Engineering & 2 yrs comp exp. Respond to: HR Dept, ADO Staffing Inc., 19 Hanover Place, Ste 295, Hicksville, NY 11801. Fax (516) 433-6575.

Web Developer wanted by Software Dvlpt & e-commerce Co in New York, NY. Must have Masters in Electrical Engg, Comp Sci or Math & 1 yr exp dvlpg websites. Respond to: Deborah, Fax: (212) 441-5843.

Technical Consultant wanted by S/ware Products & Services Firm in Cambridge, MA. Must have MS in Computer Science & 3 mos s/ware exp. Respond to: Ellen Murphy, HR Dept, Agency Interactive Management, Inc., 25 First St., Cambridge, MA 02141.

Analyst/Programmer (multiple openings) sought by Connecticut based Comp Consulting & Hardware Sales Co for job opening in Shelton, CT. Must have at least Bach in Comp Sci, Engg or related field & 3 yrs exp in software/engg/mathematics or related field. Respond to Personnel, SAI Systems International, Inc., 915 Bridgeport Ave, Shelton, CT 06484.

Systems Analyst wanted by S/ware Dvlpt Firm in Hackensack, NJ. Must have Masters in Comp Sci or Elec Engg & 1 yr exp dvlpg, modifying, coding & testing complex systems & programs in SQL envrmt, implementing load balancing for web server using VB & VC++ tools for data transfer & image conversion. Respond to: HR Dept, American Heritage Group, Ltd., Three University Plaza, Ste 18, Hackensack, NJ 07601

System Analyst wanted by Computer Software Consultancy Co in Edison, NJ. Must have Bachelor's or equiv in Comp Sci or Engg & 3 yrs exp dsgng, dvlpg & implementing client server & Internet/intranet e-commerce applics using Object Oriented Technologies. Respond to: HR Dept, AK Systems, Inc., 100 Metroplex Dr, Ste 303, Edison, NJ 08817.

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Sr. Programmer Analyst, wanted by Securities Trading Firm in Jersey City. NJ. Must have BS in Comp Sci or directly related field & 5 yrs s/ware exp. Respond to: HR Dept, Knight Securities, Inc., 525 Washington Blvd, Jersey City, NJ 07310.

Programmer Analyst wanted by New Jersey based S/ware Dvlpt & Comp Consulting Firm for job locs throughout the US. Must have Bach in Engg, Sci, Comp Sci & 1 yr s/ware exp dvlpg Oracle database packages & implementing AIX Shell Scripts. Respond to: HR Dept, Datalog Technology Resources, Inc., 205 Cinder Rd, Edison, NJ 08820.

Programmer Analysts (Multiple Openings) sought by IT Consulting Co. in Brookline, MA for job locs throughout the Greater Boston area. Must have BS in Comp Sci, Applied Math or Engg and 2 yrs experience in any software development occupation. Respond by resume to: HR Dept, ICCT, 1842 Beacon St. Brookline, MA 02445.

SAP Specialist wanted by Computer Services Co in Edison, NJ. Must have Bach in Comp Sci, Comp Engg or Elec Engg & 1 yr exp dvlpg & coordinating quality improvement & operations planning projects w/SAP/3 implementation. Design, scripting, & configuration of MM & QM functionality. Integration between MM, FI, QM & PP. Respond to: HR Dept, Horizon Companies, Inc., 2025 Lincoln Hwy, Ste 322, Edison, NJ 08817.

Associate Technical Consultant wanted by Software Products & Services Firm in Cambridge, MA. Must have BS in Comp Sci & 2 mos. s/ware exp. Respond to: Ellen Murphy, HR Dept, Agency Interactive Management, Inc., 25 First St, Cambridge, MA 02141.

Chief Computer Programmer wanted by Hotel in Myrtle Beach, SC. Must have BS in Sci or Engg & 2 yrs exp in prgmg analysis. Respond to: Atlantic Paradise Inn, Inc., 1401 South Ocean Blvd, Myrtle Beach, SC 29577.

Software Configuration Manager (multiple openings) wanted by Software Configuration Mgmt Co in Redbank, NJ. Must have Masters in Comp Sci, Comp Engg. Respond to: HR Dept, Configuration Management, Inc., 140 Broad St, Redbank, NJ 07701.

Software Engineer wanted by Comp Solutions & Internet/Database Co in Farmington, CT. Must have Bach in Comp Sci or Elec Eng & 2 yrs IT exp. Respond to: Ad# App Dev-062000, HR Dept, Spellnet, LLC, 1577 New Britain Ave, Farmington, CT 06032.

Systems Analyst/Oracle Developer wanted. Must have Master's degree in Eng. or Comp. Sci. and 3 yrs. IT exp. or Bachelor's and 5 yrs. Respond to AD # IN-02, Attn. K. Parenti, ESPN Inc., One ESPN Plaza, Bristol, CT 06010. Fax 860-766-2425.

Software Engineers (multiple positions) sought by New Jersey based Comp S/ware Consultancy Firm for job loc in Philadelphia. Must have Bach or equiv in Comp Sci or Engg & 1 yr s/ware exp. Respond to: HR Dept, SysFour Solutions, LLC, 3530 Route 27, Ste 203, Kendall Park, NJ 08824.

Associate Applications Consultant wanted by Professional Services Firm in Boston, MA. Must have Masters in Bus Admin, MIS, CS or related & 1 yr LAN exp. Respond to: Jill Fioretti, HR Dept, Extraprise Group, Inc., 27 Melcher St, Boston, MA 02210.

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- To assist in analyzing existing information processing systems to evaluate effectiveness & develop new programming to maximize efficiency. Must have Bachelors Degree in Computer Science, Engineering or a related discipline, working knowledge of COBOL, SQL, UNIX & Windows NT, which may be attained through education or employment.

**Systems Analysts (Senior)**
- To develop billing software for client's long distance service. Must have a Masters Degree in Computer Science, Math, Engineering or a related discipline & exp. w/COBOL, C, ProC, ORACLE & UNIX, which may be attained through education or employment.

**Systems Analysts**
- To develop & customize a three-tier client-server system for the telecommunications industry. Must have a Bachelor's Degree in Math, Physics, Engineering, Computer Science or a related discipline & 2 years of related exp. Must have exp. w/PowerBuilder, ORACLE, Pro*C, Windows NT & UNIX, which may be attained through education or employment
- To develop, manage, maintain & troubleshoot telecommunications software systems, including the billing production environment. Must have a Bachelors Degree in Computer Science, Engineering, Math or a related discipline & 2 years of related exp. as well as exp. w/COBOL, C, C++ and Pascal.

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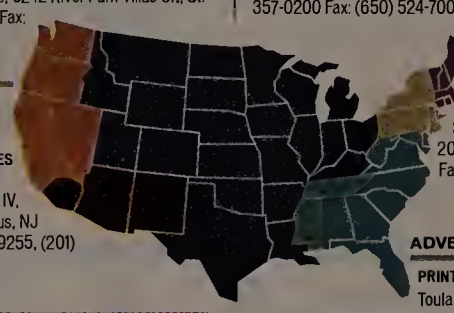

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# Venture Capitalists Loyal to High-Tech

*But plans must show profit or buyout potential*

BY JENNIFER DISABATINO

DESPITE A ROCKY year on Wall Street, venture capitalists still seem to be enamored of technology companies, including the maligned dot-coms.

From 1997 to 1999, venture capital investments rose from $11.5 billion to $35.6 billion — a figure that was surpassed in just the first six months of this year, according to the Money Tree National Survey conducted by New York-based PricewaterhouseCoopers.

Of those investments, technology companies received 95% of all funding in the second quarter, though pure dot-coms accounted for only about 20% of that amount, according to the survey.

There's still a strong demand for networking technology and Internet infrastructure companies in general, says Mark Opel, chief operating officer at Capital.com Inc. in Bethesda, Md.

Start-ups, regardless of the particular technology they offer, have a high likelihood of being acquired by an established enterprise, says Kirk Walden, national director of the Money Tree survey.

Acquisition is another "valid exit strategy" for venture capitalists that invest in struggling companies, Walden says.

But while investors are still attracted to technology companies, most are no longer willing to fall for just any hot new start-up that lacks a business plan, says Opel.

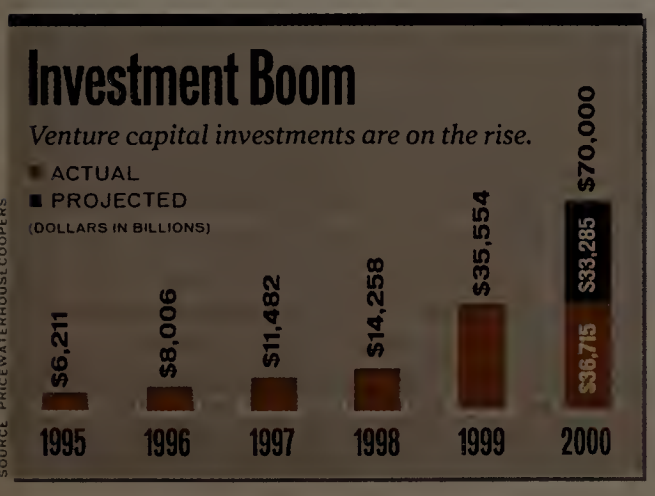
INDUSTRY ALMANAC

"There was a time when the rules changed" and investors thought new technology would sell itself, Opel says. "Now, you invest to make great companies."

Boston-based Massachusetts Business Development Corp. (MassBusiness), which launched a venture capital unit for technology in February last year, has always looked for solid business plans, says Matt Kelley, director of private equity investment for MassBusiness' MB Capital division.

MassBusiness, in a partnership with Zero Stage Capital Inc. and Mass Capital Corp., has been an initial investor in companies like About.com Inc. and Silknet Software Inc., as well as the failed online toy retailer Toysmart.com Inc.

"If it's somebody's opinion that venture capitalists are interested in investing in companies and they don't care if the company survives, that's not good business," Kelley says. "You have to build [a] company that has true value."

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| T | 61.00 | 29.62 | AT&T | 32.00 | 0.88 | 2.8 |
| BCE | 137.50 | 21.06 | BCE Inc. | 23.13 | -0.19 | -0.8 |
| BLS | 53.50 | 34.93 | Bell South | 36.38 | -1.50 | -4.0 |
| BRW | 41.06 | 16.31 | Cincinnati Bell Inc. | 24.75 | -2.69 | -9.8 |
| CMCSK | 57.68 | 27.87 | Comcast | 38.69 | 5.53 | 16.7 |
| COX | 58.37 | 34.25 | Cox Communications Inc. | 37.50 | 1.31 | 3.6 |
| GSTRF | 53.75 | 5.81 | Globalstar Telecom. Ltd. | 8.34 | 0.84 | 11.3 |
| NXTL | 82.93 | 22.68 | Nextel Communications | 57.06 | 2.81 | 5.2 |
| SPOT | 74.25 | 28.25 | Panamsat (L) | 32.13 | 2.88 | 9.8 |
| QCOM | 200.00 | 33.96 | Qualcomm | 60.13 | -0.81 | -1.3 |
| SBC | 59.87 | 34.81 | SBC Communications | 39.88 | -3.31 | -7.7 |
| FON | 75.93 | 32.12 | Sprint Corp. (L) | 32.31 | -2.75 | -7.8 |
| TOS | 137.00 | 65.81 | Telephone and Data Systems | 116.56 | 1.88 | 1.6 |
| VIA | 76.06 | 38.43 | Viacom | 69.00 | -3.06 | -4.2 |
| WCII | 66.50 | 24.00 | Winstar Communications Inc. | 30.94 | 2.94 | 10.5 |
| WCOM | 61.33 | 32.56 | MCI Worldcom Inc. (L) | 34.56 | 0.63 | 1.8 |
| **SERVICES** OFF -0.8% | | | | | | |
| ACXM | 35.93 | 14.56 | Acxiom Corp. | 25.03 | 0.47 | 1.9 |
| ACS | 49.87 | 31.00 | Affiliated Computer Servs | 46.56 | -1.50 | -3.1 |
| AMSY | 44.37 | 19.75 | American Mgt. Systems | 23.41 | -0.03 | -0.1 |
| AUD | 58.68 | 37.37 | Automatic Data Processing (H) | 58.31 | 2.44 | 4.4 |
| BSYS | 69.00 | 41.37 | Bisys Group Inc. | 66.63 | 3.50 | 5.5 |
| CATP | 27.00 | 6.75 | Cambridge Technology Ptnrs | 7.88 | -0.06 | -0.8 |
| CEN | 29.93 | 14.75 | Ceridian | 24.44 | -0.44 | -1.8 |
| CBR | 29.81 | 9.93 | Ciber Inc. (L) | 10.25 | -0.69 | -6.3 |
| COD | 57.25 | 17.43 | Comdisco | 23.38 | -0.88 | -3.6 |
| CHRZ | 27.12 | 10.25 | Computer Horizons Corp. (L) | 10.94 | -0.81 | -6.9 |
| CSC | 99.87 | 57.93 | Computer Sciences | 76.50 | 0.63 | 0.8 |
| OST | 100.25 | 51.18 | Ost Systems Inc. (H) | 97.38 | 0.31 | 0.3 |
| EDS | 76.68 | 38.37 | Electronic Data Systems | 49.75 | 0.00 | 0.0 |
| FDC | 57.68 | 38.93 | First Data Group | 49.81 | -1.13 | -2.2 |
| FISV | 57.00 | 24.12 | Fiserv | 53.91 | 0.41 | 0.8 |
| IT | 23.12 | 9.56 | Gartner Group | 13.75 | 0.25 | 1.9 |
| KEA | 35.00 | 17.62 | Keane (L) | 17.94 | -0.75 | -4.0 |
| NDC | 43.00 | 20.75 | National Data | 29.63 | -0.56 | -1.9 |
| PAYX | 47.62 | 15.70 | Paychex Inc. | 43.88 | -2.69 | -5.8 |
| PER | 27.93 | 8.87 | Perot Systems Corp. | 10.94 | -0.25 | -2.2 |
| REGI | 9.75 | 1.25 | Renaissance Worldwide | 1.88 | -0.09 | -4.8 |
| REY | 33.00 | 15.93 | Reynolds & Reynolds | 17.19 | -0.25 | -1.4 |
| SFE | 99.00 | 15.85 | Safegard Scientifics | 23.44 | 0.13 | 0.5 |
| SAPE | 151.18 | 26.25 | Sapient Corp. | 126.81 | -5.06 | -3.8 |
| SDS | 40.00 | 16.87 | Sungard Data Systems | 37.00 | 1.56 | 4.4 |
| SYNT | 20.93 | 7.87 | Syntel Inc. | 9.38 | 0.06 | 0.7 |
| TECD | 52.12 | 18.00 | Tech Data | 47.19 | 3.44 | 7.9 |
| TENF | 76.87 | 6.75 | TenFold Corp. (L) | 7.81 | -0.44 | -5.3 |
| TSS | 20.62 | 14.12 | Total System Services Inc | 17.81 | -0.06 | -0.3 |
| TSAI | 48.12 | 11.37 | Transaction Sys. Architects | 18.69 | 0.44 | 2.4 |
| **NETWORK** UP 1.3% | | | | | | |
| COMS | 119.75 | 12.50 | 3Com Corp. | 16.88 | 0.88 | 5.5 |
| AOCT | 49.00 | 8.59 | AOC Telecommunications Inc. | 43.38 | 1.88 | 4.5 |
| ANTC | 61.25 | 23.25 | Antec | 42.63 | -0.38 | -0.9 |
| CS | 52.75 | 11.12 | Cabletron Systems | 34.69 | 6.81 | 24.4 |
| CNEBF | 6.43 | 1.43 | Call-Net Enterprises | 1.66 | -0.18 | -8.6 |
| CSCO | 82.00 | 28.07 | Cisco Systems Inc | 63.94 | -0.31 | -0.5 |
| ECIL | 39.87 | 23.75 | ECI Telecom | 30.81 | 1.56 | 5.3 |
| ENTU | 150.00 | 18.31 | Entrust Technologies Inc. | 23.63 | -1.31 | -5.3 |
| EPRE | 40.56 | 6.06 | ePresence Inc. | 6.88 | 0.28 | 4.3 |
| HRS | 39.37 | 15.50 | Harris Corp. | 30.31 | 0.50 | 1.7 |
| GMH | 46.66 | 16.25 | Hughes Electronics/GM | 30.75 | 2.00 | 7.0 |
| ERICY | 26.31 | 7.21 | LM Ericsson | 19.75 | 0.94 | 5.0 |
| JNPR | 181.25 | 24.33 | Juniper Networks Inc | 171.31 | 9.44 | 5.8 |
| LU | 84.18 | 39.62 | Lucent Technologies (L) | 43.19 | 3.25 | 8.1 |
| MAOGF | 17.37 | 1.43 | Madge Networks | 3.16 | 0.03 | 1.0 |
| NCOI | 9.62 | 1.03 | Network Computing Dev | 1.09 | -0.09 | -7.9 |
| NWK | 14.81 | 7.31 | Network Equipment Tech. | 9.19 | -0.19 | -2.0 |
| NOK | 62.50 | 19.26 | Nokia Corp. | 41.44 | 0.38 | 0.9 |
| NT | 86.00 | 19.90 | Northern Telecom Ltd. | 83.19 | 6.75 | 8.8 |
| PCTL | 15.21 | 1.87 | Picturetel | 5.78 | 0.09 | 1.6 |
| SFA | 94.00 | 16.90 | Scientific Atlanta (H) | 79.81 | 13.31 | 14.3 |
| TLAB | 77.25 | 41.81 | Tellabs Inc. | 61.75 | -2.44 | -3.8 |
| VRLK | 22.00 | 1.81 | Verilink | 8.75 | -0.75 | -7.9 |
| WSTL | 40.75 | 6.43 | Westell Technology Inc. | 16.38 | -0.38 | -2.2 |
| **SEMICONDUCTORS, CHIPS & EQUIPMENT** UP 16.9% | | | | | | |
| ADPT | 63.56 | 15.37 | Adaptec Inc | 22.72 | 0.41 | 1.8 |
| AMD | 97.00 | 15.62 | Advanced Micro Devices | 69.94 | 13.63 | 24.2 |
| ALTR | 64.25 | 17.53 | Altera (H) | 64.25 | 10.00 | 18.4 |
| AOI | 100.00 | 20.81 | Analog Devices | 94.69 | 25.63 | 37.1 |
| AMAT | 115.00 | 31.12 | Applied Materials | 84.63 | 16.06 | 23.4 |
| ASML | 50.25 | 17.83 | ASM Lithography Holding | 40.25 | 5.75 | 16.7 |
| FCS | 49.50 | 18.50 | Fairchild Semiconductor Corp. | 40.44 | 7.13 | 21.4 |
| HRS | 39.37 | 15.50 | Harris Corp. | 30.31 | 0.50 | 1.7 |
| INTC | 73.75 | 32.50 | Intel Corp. | 71.56 | 8.08 | 12.7 |
| KLAC | 97.75 | 29.90 | Kla Instruments | 56.56 | 12.69 | 28.9 |
| LLTC | 74.75 | 27.62 | Linear Technology | 68.91 | 6.59 | 10.6 |
| LSI | 90.37 | 21.58 | LSI Logic | 40.38 | 7.19 | 21.7 |
| MXIM | 82.31 | 30.31 | Maxim Integrated Products (H) | 82.31 | 7.38 | 9.8 |
| MU | 97.50 | 27.53 | Micron Technology | 89.19 | 14.56 | 19.5 |
| MOT | 61.54 | 27.33 | Motorola | 36.38 | 2.31 | 6.8 |
| NSM | 85.93 | 22.06 | National Semiconductor | 45.06 | 10.13 | 29.0 |
| STM | 73.87 | 21.27 | SGS-Thomson Microelectronics | 62.63 | 6.38 | 11.3 |
| SLR | 49.50 | 28.25 | Solectron Corp. | 44.38 | 6.06 | 15.8 |
| TER | 115.43 | 26.93 | Teradyne | 68.19 | 14.75 | 27.6 |
| TXN | 99.78 | 33.78 | Texas Instruments | 70.06 | 11.69 | 20.0 |
| JDSU | 153.42 | 20.25 | Uniphase | 122.63 | 4.19 | 3.5 |
| VTSS | 115.68 | 31.37 | Vitesse Semiconductor Corp | 82.13 | 9.88 | 13.7 |
| XLNX | 98.31 | 30.06 | Xilinx | 87.78 | 9.91 | 12.7 |
| **COMPUTER SYSTEMS** UP 4.2% | | | | | | |
| AAPL | 75.18 | 26.06 | Apple Computer Inc. | 50.81 | 3.81 | 8.1 |
| ASPX | 19.00 | 3.87 | Auspex Systems | 7.06 | 0.31 | 4.6 |
| BEOS | 39.56 | 3.28 | Be Inc. | 4.13 | 0.25 | 6.5 |
| CPQ | 34.00 | 18.25 | Compaq | 33.13 | 2.00 | 6.4 |
| DELL | 59.68 | 35.00 | Dell Computer Corp. | 38.56 | 0.44 | 1.1 |
| GTW | 84.00 | 36.56 | Gateway 2000 Inc. | 64.00 | 2.88 | 4.7 |
| HWP | 155.50 | 67.00 | Hewlett-Packard Co. | 111.25 | 1.44 | 1.3 |
| HIT | 164.50 | 92.00 | Hitachi Ltd | 113.13 | -0.63 | -0.5 |
| IBM | 137.68 | 89.00 | IBM | 121.06 | -0.69 | -0.6 |
| MUEI | 20.68 | 8.18 | Micron | 11.44 | 1.13 | 10.9 |
| MOT | 61.54 | 27.33 | Motorola | 36.38 | 2.31 | 6.8 |
| NATI | 59.50 | 25.50 | National Instruments Corp. | 45.13 | 1.13 | 2.6 |
| NCR | 47.00 | 26.68 | NCR | 35.56 | 2.13 | 6.4 |
| NIPNY | 162.00 | 72.62 | NEC | 137.50 | 9.88 | 7.7 |
| PRCM | 89.75 | 5.62 | Procom Tech Inc. | 44.38 | 8.13 | 16.0 |
| SGI | 17.68 | 3.06 | Silicon Graphics Inc. | 4.81 | 0.44 | 10.0 |
| SNE | 157.37 | 59.00 | Sony | 97.69 | 2.81 | 3.0 |
| SUNW | 122.44 | 32.93 | Sun Microsystems (H) | 122.44 | 11.56 | 10.4 |
| TRCO | 23.37 | 2.75 | Tricord Systems | 13.38 | -2.63 | -16.4 |
| UIS | 49.68 | 9.12 | Unisys | 11.13 | -0.50 | -4.3 |
| **INTERNET** UP 9.3% | | | | | | |
| AMZN | 113.00 | 27.87 | Amazon.com | 39.81 | 7.31 | 22.5 |
| AOL | 95.81 | 38.48 | America Online | 55.06 | 3.06 | 5.9 |
| ATHM | 59.75 | 12.87 | @home Corp. | 14.75 | 1.19 | 8.8 |
| CKFR | 125.62 | 23.12 | Checkfree | 47.94 | -1.75 | -3.5 |
| CYCH | 16.00 | 3.62 | Cybercash Inc. (L) | 4.75 | 0.81 | 20.6 |
| EBAY | 127.50 | 35.14 | eBay Inc. | 59.88 | 11.94 | 24.9 |
| ETYS | 86.00 | 3.87 | eToys Inc. (L) | 4.06 | 0.00 | 0.0 |
| EGRP | 40.00 | 13.12 | ETrade Group Inc. | 16.88 | 1.63 | 10.7 |
| LCOS | 93.62 | 28.56 | Lycos Inc. | 61.00 | 3.13 | 5.4 |
| OMKT | 65.50 | 6.00 | Open Market Inc. | 7.19 | 0.63 | 9.5 |
| OTEX | 60.62 | 9.50 | Open Text Corp | 25.88 | 3.88 | 17.6 |
| PCLN | 104.25 | 22.62 | Priceline.com Inc. | 25.56 | 1.75 | 7.3 |
| PRGY | 35.43 | 6.37 | Prodigy Communications | 7.69 | 0.50 | 7.0 |
| PSIX | 60.93 | 14.00 | PSINet Inc. (L) | 16.19 | 0.41 | 2.6 |
| RSAS | 93.06 | 15.87 | Security Dynamics | 65.50 | 5.13 | 8.5 |
| WINK | 75.00 | 6.00 | Wink Communications Inc. | 14.75 | 1.44 | 10.8 |
| YHOO | 250.06 | 55.00 | Yahoo Inc | 127.81 | -1.50 | -1.2 |
| **STORAGE & PERIPHERALS** UP 7.3% | | | | | | |
| ADPT | 63.56 | 15.37 | Adaptec Inc. | 22.72 | 0.41 | 1.8 |
| APCC | 48.84 | 16.00 | American Power Conversion | 22.94 | -0.13 | -0.5 |
| CANNY | 51.75 | 25.75 | Canon Inc. | 42.81 | -0.44 | -1.0 |
| OBD | 32.87 | 19.68 | Diebold Inc. | 29.44 | -0.56 | -1.9 |
| EK | 78.28 | 53.18 | Eastman Kodak Co. | 64.88 | 3.31 | 5.4 |
| EMC | 93.93 | 26.25 | EMC | 93.69 | 4.94 | 5.6 |
| IOM | 6.37 | 2.87 | Iomega | 3.56 | 0.06 | 1.8 |
| MXTR | 14.81 | 4.81 | Maxtor Corp. | 7.50 | 1.94 | 34.8 |
| NTAP | 124.00 | 12.43 | Network Appliance Inc. | 94.13 | 6.19 | 7.0 |
| LXK | 135.87 | 43.15 | Lexmark International Group Nc. | 52.81 | 7.38 | 16.2 |
| SEG | 75.43 | 26.37 | Seagate Technology | 54.63 | 3.19 | 6.2 |
| STK | 23.93 | 10.00 | Storage Technology | 12.31 | 1.19 | 10.7 |
| TEK | 87.31 | 28.37 | Tektronix | 71.50 | 11.75 | 19.7 |
| XRX | 51.37 | 14.56 | Xerox | 16.19 | -0.56 | -3.4 |

KEY: **(H)** = New annual high reached in period
**(L)** = New annual low reached in period

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## Democrats

out of either party because, quite frankly, I don't think they are prepared for the backlash they might get," said Linda Reino, CIO at Universal Health Services Inc., a large health care provider in King of Prussia, Pa.

For instance, if any candidate were to support legislation giving patients the right to control who sees their records, that would create obstacles in a clinical care setting, where many specialists may need to look at a patient's record, said Reino. "You have to ask yourself whether this is a realistic expectation," she said.

At the Democratic convention last week, Rep. Jay Inslee (D-Wash.) took to the podium to declare that Americans' privacy is "under siege."

"Big banks and business are profiling our spending habits. They are selling our credit-card records to telemarketers; our medical records can be abused," said Inslee.

The Democrats, however, aren't offering many specifics on just what's needed to address privacy issues. "I think in perception, the Democrats seem to be doing a better job on capitalizing on the privacy issue by saying they are going to do something. I don't know what that something is," said Gary Clayton, CEO of Privacy Council Inc., a consulting firm in Dallas.

The Republicans aren't going to let the Democrats champion the cause, said Alan Westin, publisher of the Hackensack, N.J.-based journal *Privacy & American Business*. "The Republicans have signaled clearly that they are not going to let the Democrats have this issue, that it resonates too strongly with their own constituencies," said Westin.

But the Democrats would likely press for stronger legislative controls and greater regulatory oversight, said Westin. The Republicans would be "more attentive" to business arguments about the practicality of legislation, he said.

In Congress, lawmakers from both parties have proposed privacy legislation that could affect how businesses maintain and share data.

David Sorkin, a law professor and privacy expert at the John Marshall Law School in Chicago, said the privacy issue has prompted some strange alliances between conservatives and liberals. "I think we're going to see targeted legislation on specific market sectors," Sorkin said. "That has certainly been the history of privacy regulation in this country." ◗

*Continued from page 1*

## Travel

updates by connecting to the Federal Aviation Administration's weather information network and to Atlanta-based computer reservations giant Worldspan LP. In addition, it built a search engine to track the on-time performance of various airlines along specific routes. The information is also available to wireless devices.

Competitors such as Fort Worth, Texas-based Travelocity.com LP and Englewood, Colo.-based Trip.com Inc. have launched similar programs. Airlines have also attempted to push information out to frustrated travelers with programs such as paging services that notify fliers of changes in their flight statuses.

"The thing that drives people nuts is their utter helplessness," said Kate Rice, an analyst at online travel research firm PhoCusWright Inc. in Sherman, Conn.

Heidi Kim, an online travel analyst at New York-based Jupiter Communications Inc., said she agrees, noting that many travelers develop "a feeling of distrust that either they're not getting the full information or that they're being lied to."

Both analysts said they see the proactive delay information as a method of placating angry travelers through technology.

"Ultimately, they want to own that customer relationship, and this is one method to do that," Kim said. "It's about managing the customers' expectations."

### Summertime Blues

With bizarre weather patterns, an aging air-traffic control system and a labor dispute between United Air Lines Inc. and its pilots, which has forced thousands of flight cancellations, the need for such information has never been greater.

"It's not hyperbole to say it's been the summer from hell for business travelers," said Kevin Mitchell, chairman of the Lafayette Hill, Pa.-based Business Travel Coalition, which lobbies for corporate travelers.

Yet, Mitchell said, there's a motive beyond customer service for online travel agencies building information technology infrastructures that bring passengers into the loop.

"More than mollifying travelers, they're trying to ward off congressional legislation," he said.

Mitchell argued that a passenger's bill of rights, a version of which was debated by Congress early last year, would hold airlines accountable for on-time performance and give passengers leverage in dealing with airline ticket sellers.

"To a degree, all of these new initiatives are ways of showing the government that they're doing something about customer service," Mitchell said. ◗

AT A GLANCE

### Air Traffic Console

*Expedia is one of the many travel vendors beefing up its flight status-tracking abilities. The following is a list of some services the company is making available to its customers:*

- A link to the **Federal Aviation Administration**'s Web site, which details which airports are experiencing delays
- A conduit to **Worldspan**'s real-time flight status information
- A **search engine** that checks how various airlines are performing along specific routes
- Web phone and personal digital assistant **access to flight information**

*Continued from page 1*

## Pandesic

operating officer and cofounder of eHobbies.com Inc. in Santa Monica, Calif. Yetts couldn't be reached for comment and company representatives declined comment.

Cohen said "most Pandesic customers" have begun using conference call facilities every Tuesday to exchange information and quell rumors. Most important, he said, "we are able to speak with one voice."

So far, the conversation has been one-way. Official information from Pandesic, which is wholly owned by Intel Corp. and SAP America Inc., has been slow in coming, users said. They hope the frosty response thaws before the winter buying season hits.

"We are all focused on the holiday season coming up," said Tony Parziale, chief technology officer at Atlanta-based Folded Edge Inc., an online fashion retailer. "It's not the time for an unplanned infrastructure transition."

For example, Parziale said Folded Edge's contract doesn't specify the format the company's proprietary data will be returned in. "If it just comes in a comma de-limited format, it won't do me much good," he said.

Jim Boeckman, an attorney at Vinson & Elkins LLP in Austin, Texas, said large companies will find themselves increasingly at risk as they drive down costs and outsource ongoing operations or use application service providers (ASP) for quick tactical projects.

"More data gets put at risk," he said. According to Boeckman, it's vital for information technology managers to be thorough in their due diligence of potential ASPs, even to go as far as to look at the service providers' financial statements.

"And you have to be prepared to move quickly with contingency plans," he said.

EHobbies.com had already created a detailed transition plan for itself, according to Cohen. The company had always planned to move operations in-house and had intended to part ways with Pandesic this summer, well before the holiday shopping season. But the stock market tumble in April hurt eHobbies.com's valuation and led the company to "put that plan on hold," he said. So Cohen signed another contract with the ASP.

The transition plans, however, are done, and Cohen says he feels confident.

"We've already taken components out from Pandesic," Cohen said.

At Folded Edge the news isn't so good. Parziale said that the start-up's second round of investors backed away once the news about Pandesic's closure became known to them.

"This could not have come at a worse time," he said. However, the company does have the money to make it through the holiday season, he added. ◗

### Check the Contract

*Outsourcing contracts differ from hardware or software agreements because they aren't one-time transactions. Be sure to:*

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- Get access to source code for your use to ensure no **interruption of business**
- Obtain rights to offer ASP employees **jobs during a transition**

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FRANK HAYES/FRANKLY SPEAKING

# A speedy recovery

SCREWUPS HAPPEN. No matter how carefully you set up security, no matter how sensitive you are to customer privacy, a few simple mistakes can blow it all to hell. That's what happened three weeks ago to Kaiser Permanente, the giant HMO based in Oakland, Calif. By normal business standards, Kaiser is close to fanatical about patient privacy. Security is tight: Even if you're a Kaiser doctor, you can't get access to a patient's records unless you're that patient's doctor. But on Aug. 2, a few technical problems and human mistakes in Kaiser's IT shop pumped information on hundreds of patients to the wrong people. [News, Aug. 14].

That's the bad news. The good news is that the Kaiser incident is a blueprint for the *right* way to handle a big privacy foul-up.

(Full disclosure: I'm not a Kaiser patient, and never have been. *Computerworld* does offer Kaiser as a health care option to some of its employees, though.)

What happened? Kaiser's Web site was upgrading servers late last month, which required a patch. That patch caused patient e-mail to back up. Meanwhile, an IT staffer wrote a script to send e-mail to 19 addresses. Something went wrong, and various quantities of 858 backed-up messages were sent to each of 17 patients (two of the 19 addresses weren't valid).

The error was caught and the script stopped within 20 minutes. But hundreds of messages, some containing confidential medical information, had blown patient privacy right out of the water.

That's what went wrong. What did Kaiser do right?

First, people in IT were paying attention: An IT staffer noticed the script was pumping out much more message data than it was supposed to, and the staffer shut down the process.

Then somebody took it personally: Anna-Lisa Silvestre, who runs Kaiser Permanente Online. There was no fight over who would clean up the mess — she just plowed into it.

There was support from the top: Kaiser CEO Dave Lawrence didn't duck the problem and even offered to stand up at a press conference if necessary. That kind of backing makes things happen.

IT staff pitched in: Almost 900 patients had to be called. Regulators in 11 states had to be notified. IT staffers worked around the clock to deal with the results of a few minutes' worth of mistake.

There was nothing fancy in the effort, no elegant technical hack. Human error created the problem, and a lot of hard human work was required to fix it.

The bottom line? The screwup was monumental, but it looks like it wasn't catastrophic. It was contained because everyone jumped on the problem fast. No denial, no finger-pointing paralysis — IT people took responsibility for it, got management's support and sweated the hard work to get it done, no matter what.

> *There was no fight over who would clean up the mess.*

Most important, the patients seem to understand — the ones whose privacy was violated and those whose mailboxes were flooded with other people's messages. Each one got a human voice explaining the problem. That alone went a long way to rebuild trust.

And without trust, Kaiser — or any other e-organization — is out of business.

The "root cause evaluation," in Kaiser's doctorspeak, will take weeks. It will try to determine exactly what happened and how to avoid this kind of problem in the future.

But the real question isn't what will happen next time at Kaiser Permanente. We already know they can handle it.

The real question is: What happens when this kind of nightmare strikes somewhere else?

Because screwups happen. And if they can happen to Kaiser, they can happen to you. ◗

*Hayes, Computerworld's staff columnist, has covered IT for more than 20 years. His e-mail address is frank_hayes@computerworld.com.*

## SHARK TANK

**A PILOT FISH** is called in to troubleshoot an e-commerce project that customers are unhappy with. He checks it out and reports back to the CIO that the users don't like the system because, well, it doesn't do what they want it to. Forget it then, says the boss: "The system works. User problems are not our concern."

**WORKING ON** a data recovery plan, a network admin pilot fish suggests making reliable backups standard policy. Costly and unnecessary, replies the boss. His plan: If the server crashes, he'll pull the disks out, install them in his workstation and put the files on diskettes for users.

**A SMALL LOCAL GOVERNMENT'S** systems get their share of hacker attacks and e-mail viruses – the price of staying connected to constituents, says a consultant pilot fish who helps keep them running. But one local official takes it personally. "I've got a good mind just to jerk the whole thing out," he fumes. "That e-mail is nothing more than a bitch line!"

**TO IMPROVE E-MAIL** server performance, outsourced central IT staff turns off on-the-fly virus scanning for e-mail. Instead, grumbles this pilot fish in a field office, they scan each machine on the network just once per night for viruses. Which means *every* new virus runs rampant through the network. "And then," says the fish, "we all get notified later that night."

**HUMAN RESOURCES** manager storms into system administrator pilot fish's cubicle. Rumor has it the fish knows everyone's log-on password, he says. True, fish says – they're all in a secure database in case of emergency. "Well, what keeps you from logging in as an HR employee and changing your salary?" he sputters. "Same thing that keeps you from doing it," the fish says. "It's illegal." The HR manager stares at the fish, spins on his heel, storms away – and never mentions it again.

At least he got it on the second try. Try sending me *your* story: **sharky@computerworld.com.** If it sees print, you get a sharp Shark shirt. And get more true tales of IT every day online at *computerworld.com/sharky.*

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